

FIG. 1

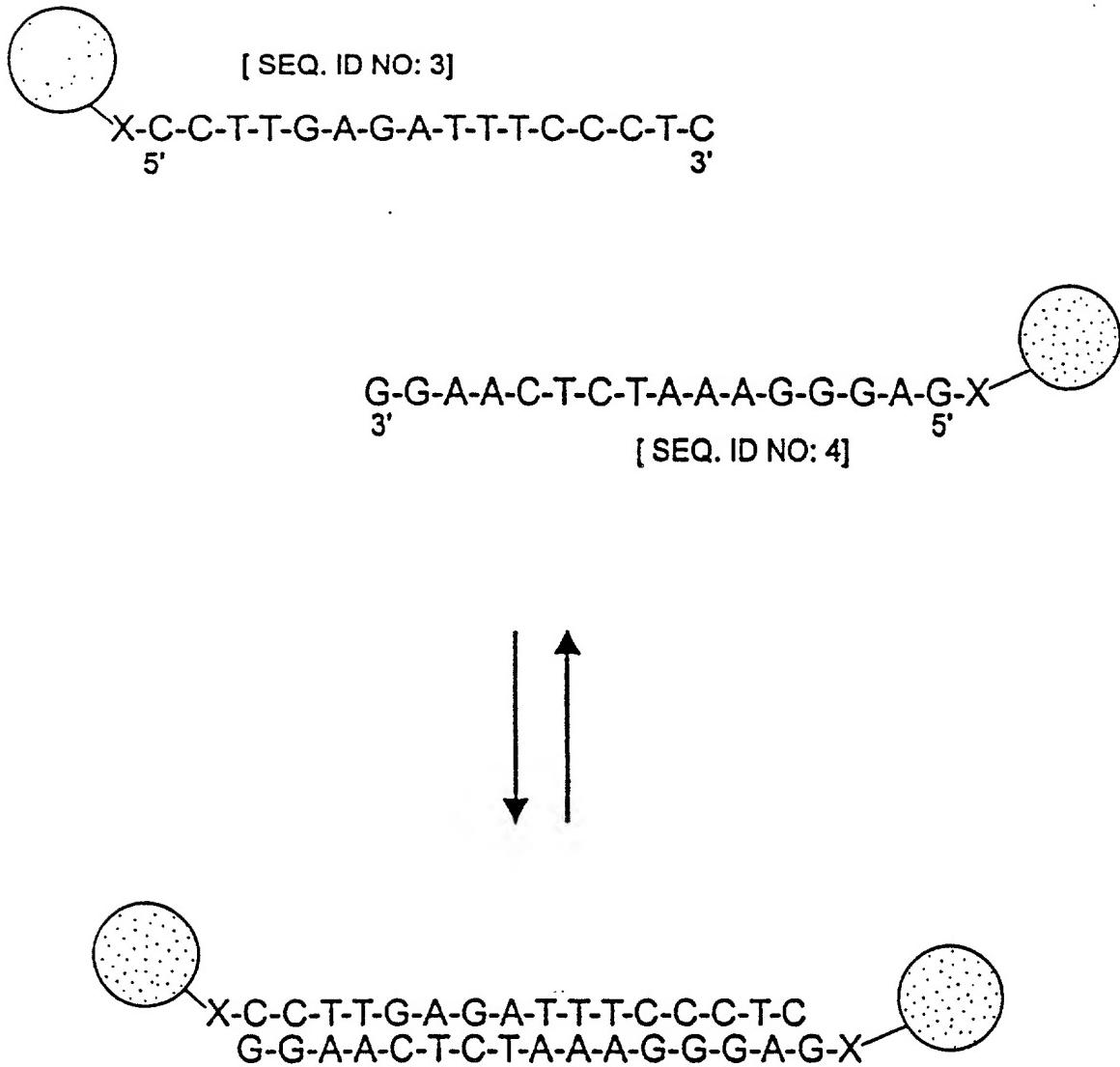


FIG.2

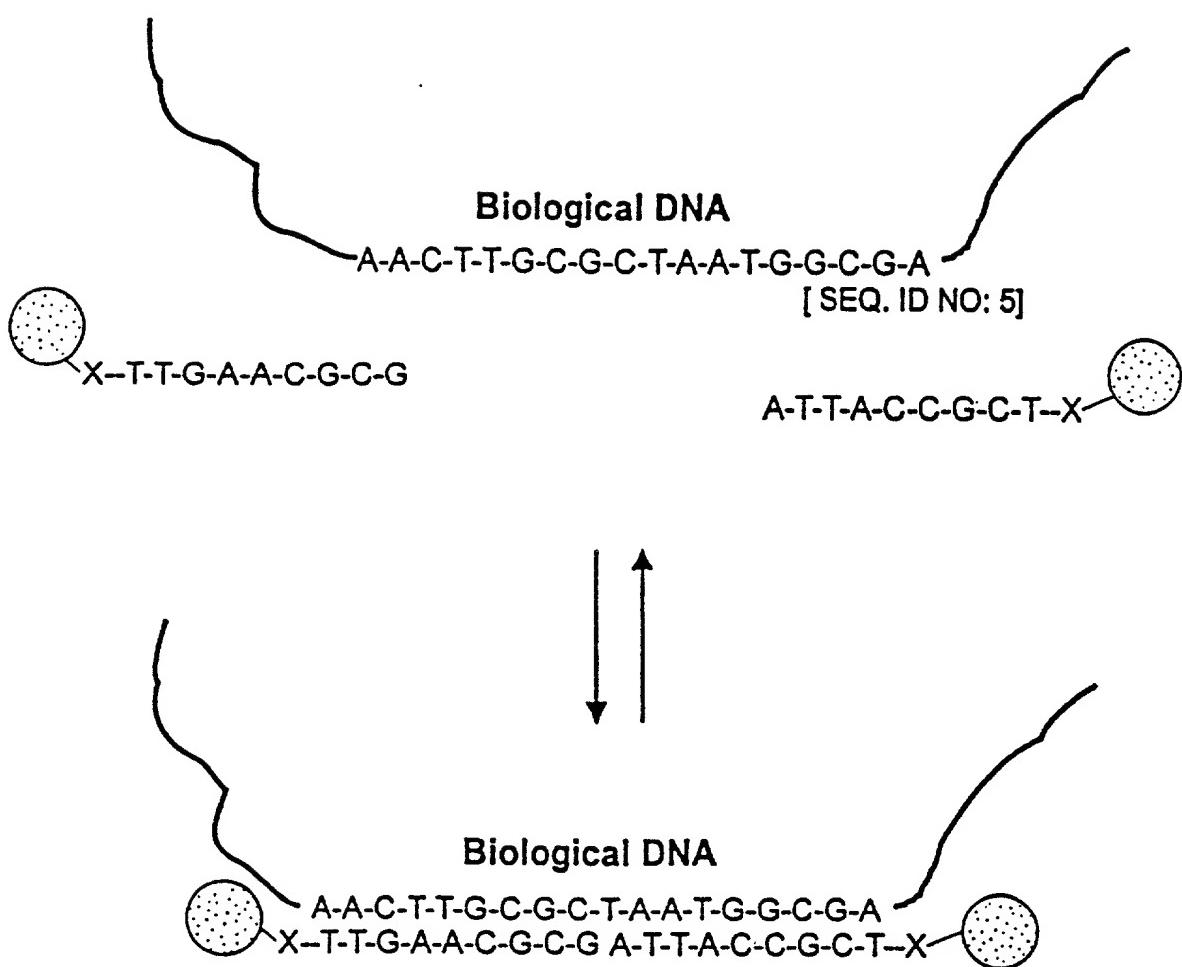


FIG. 3

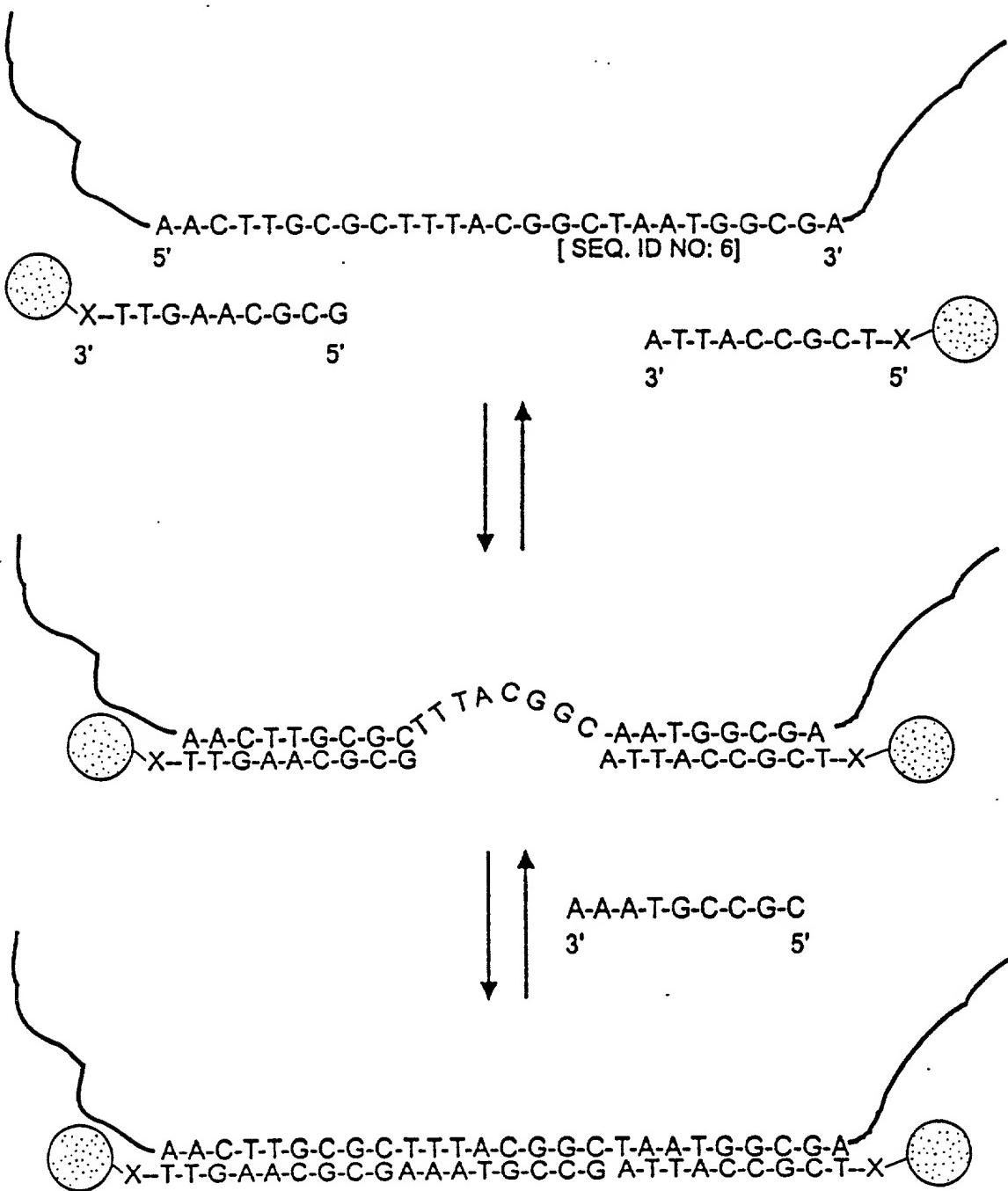


FIG. 4

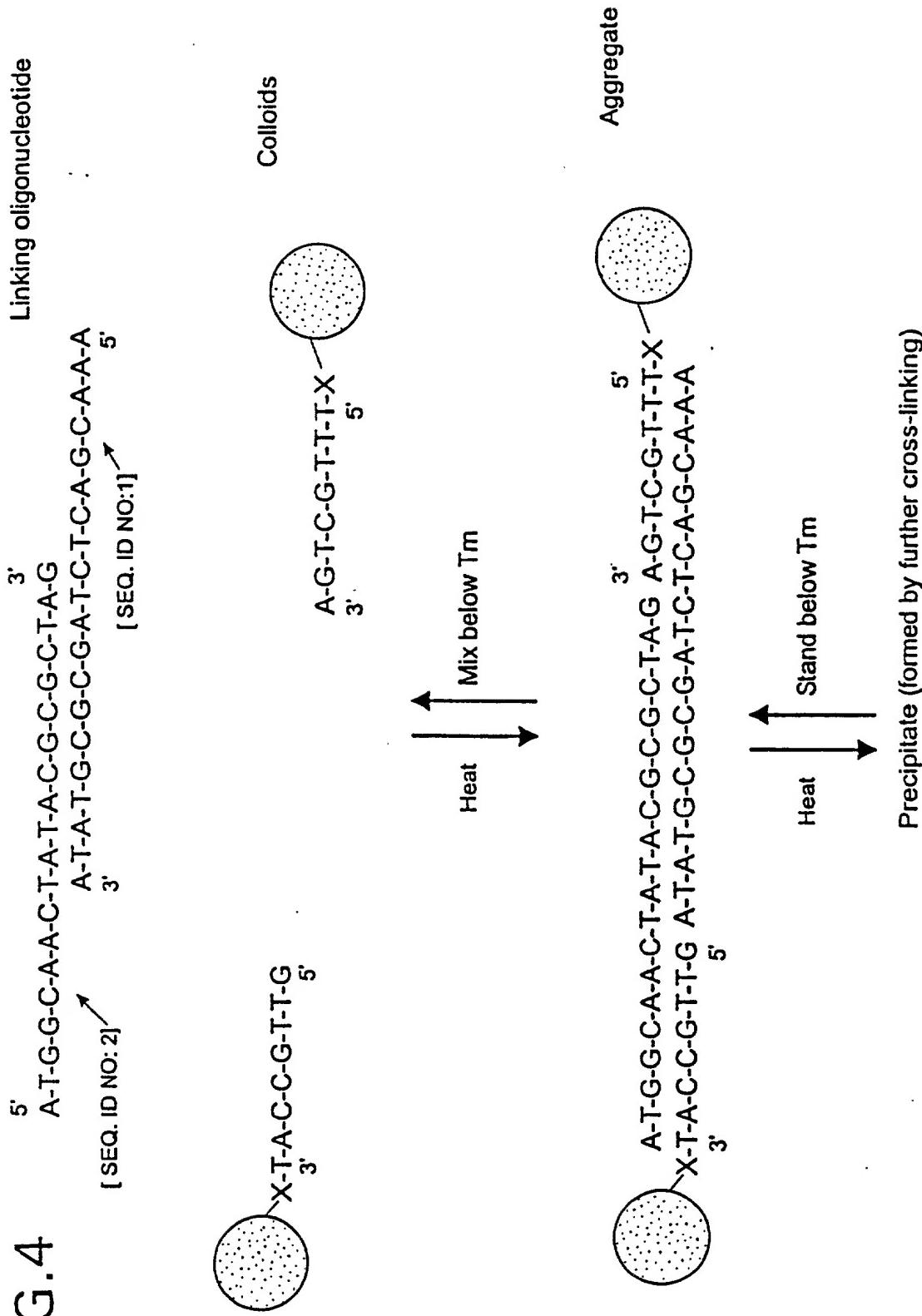


FIG.5

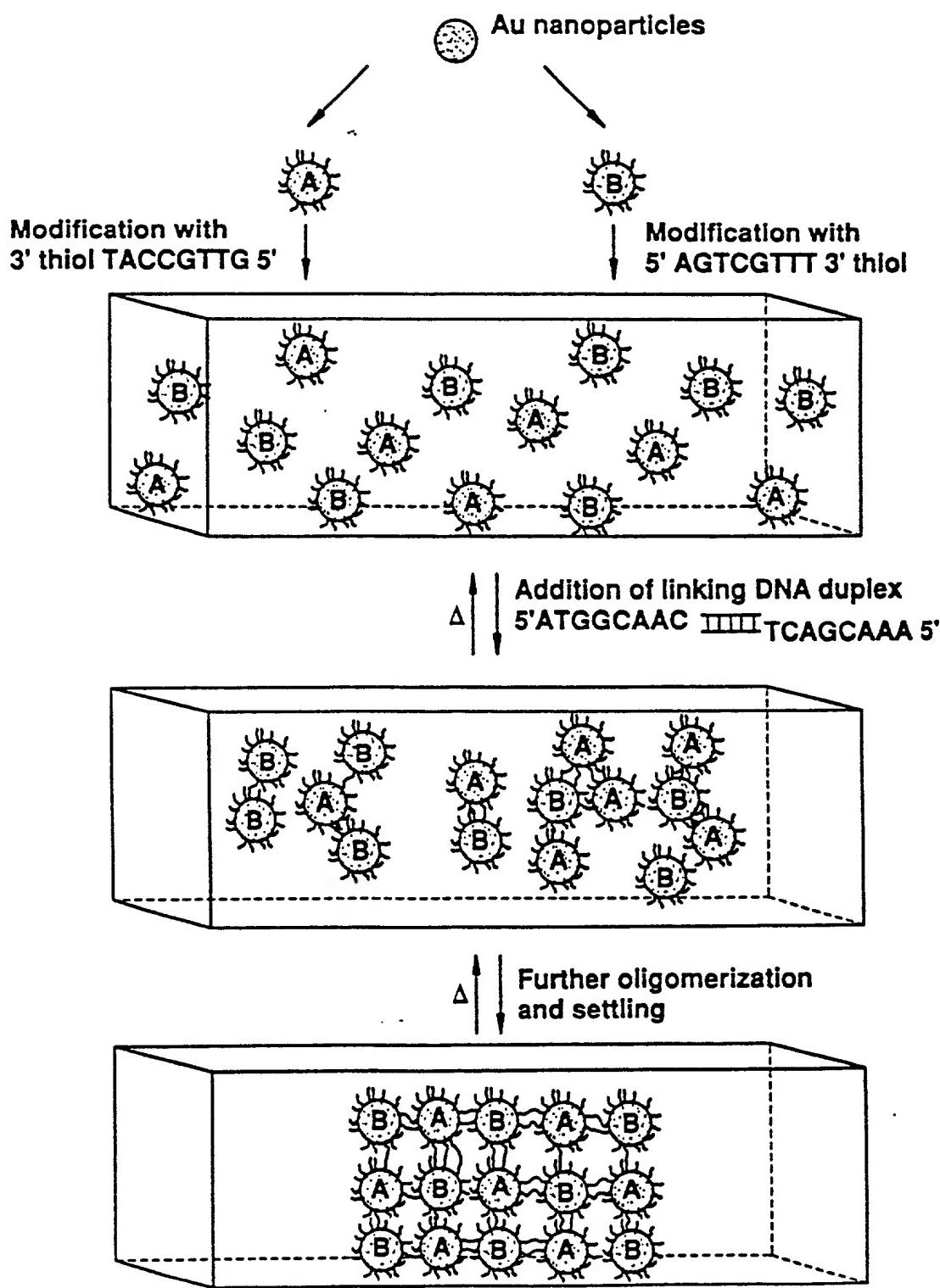




FIG.6A



FIG.6B



FIG.6C

FIG. 7

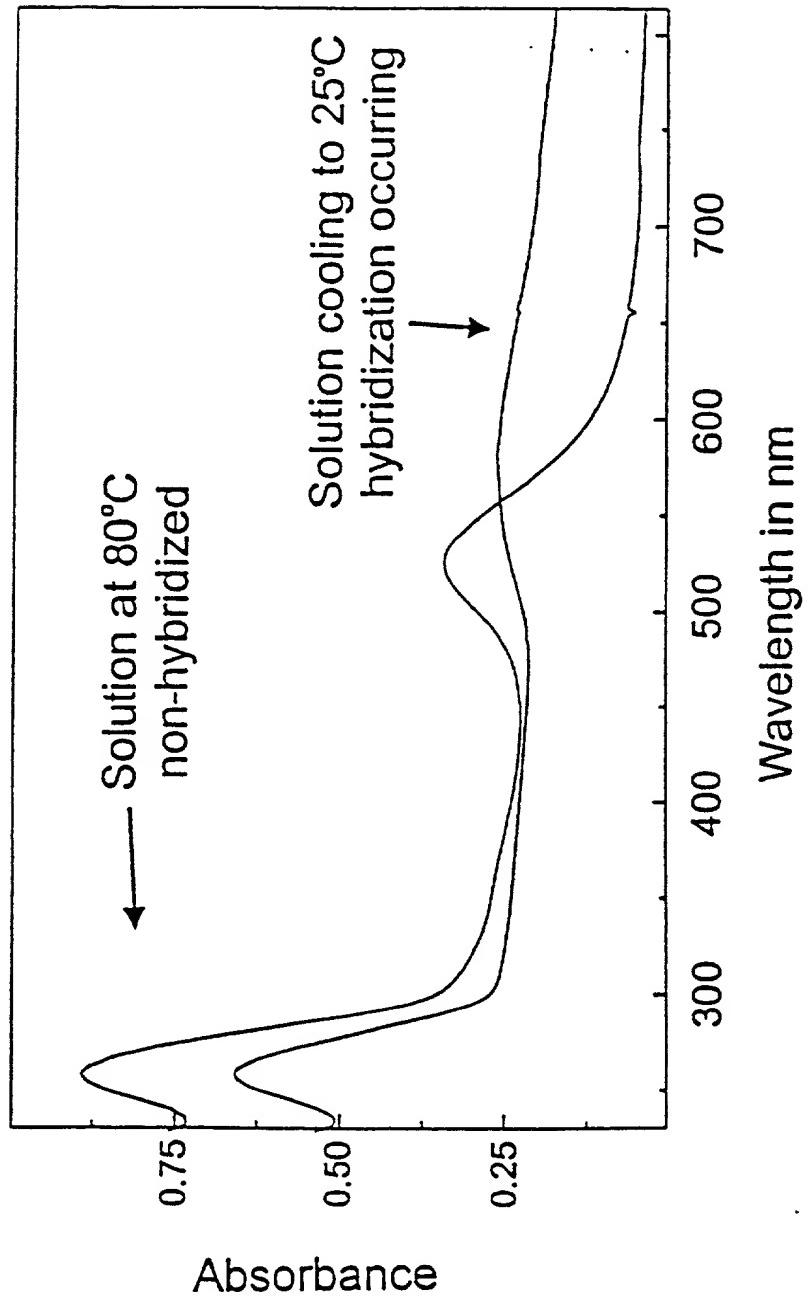


FIG. 8A

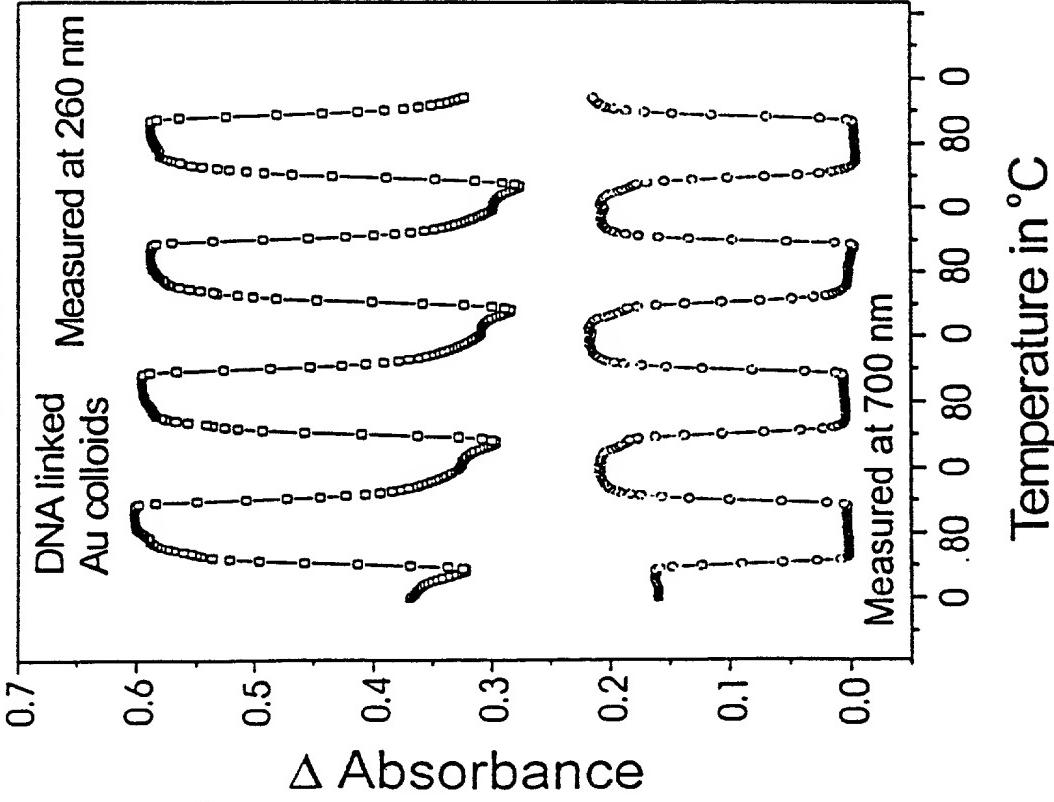


FIG. 8B

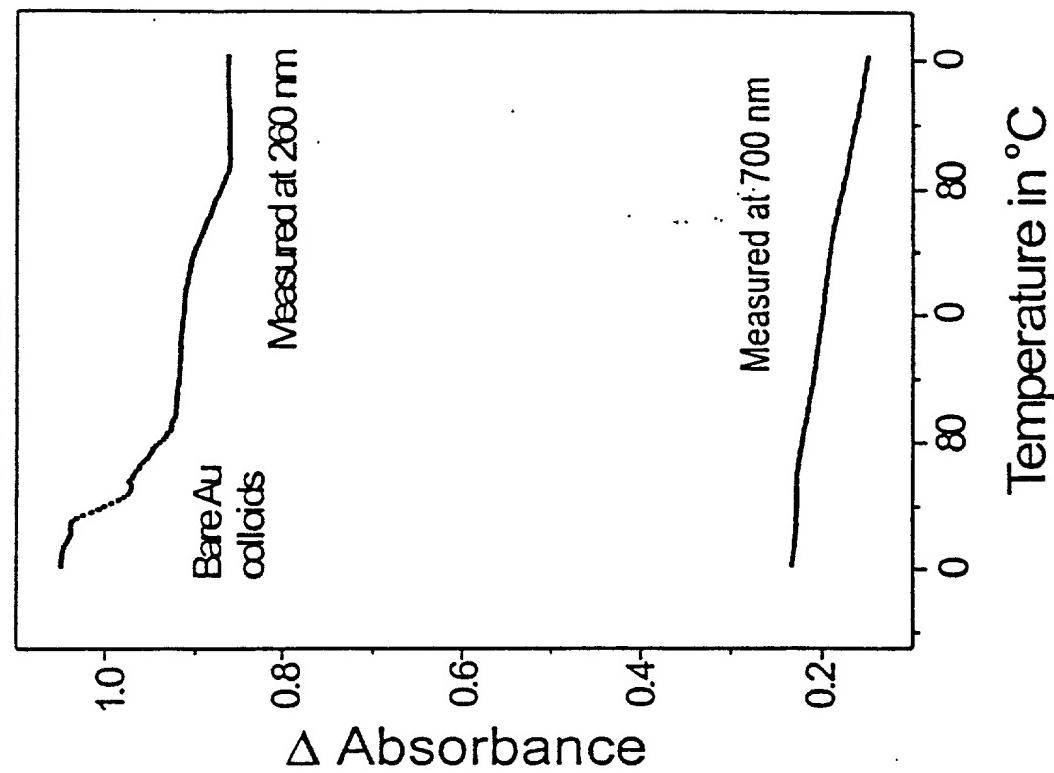




FIG.9A

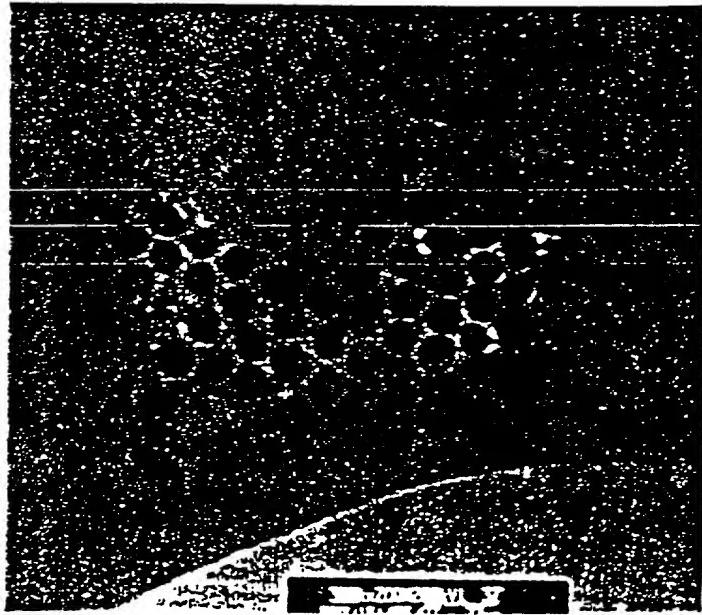


FIG.9B

FIG. 10

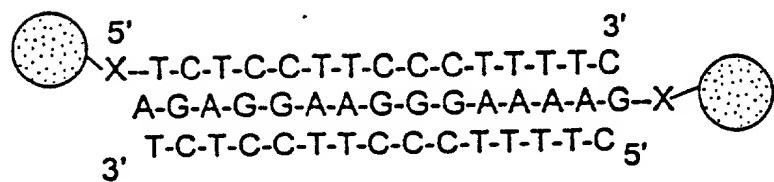
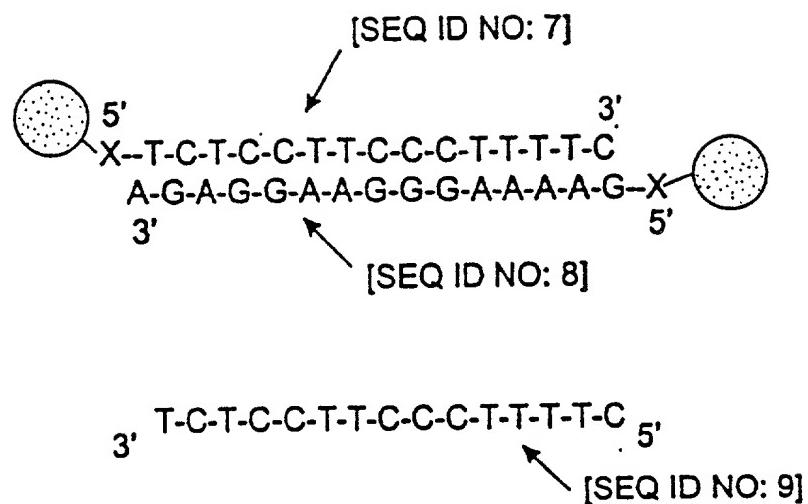


FIG. 11

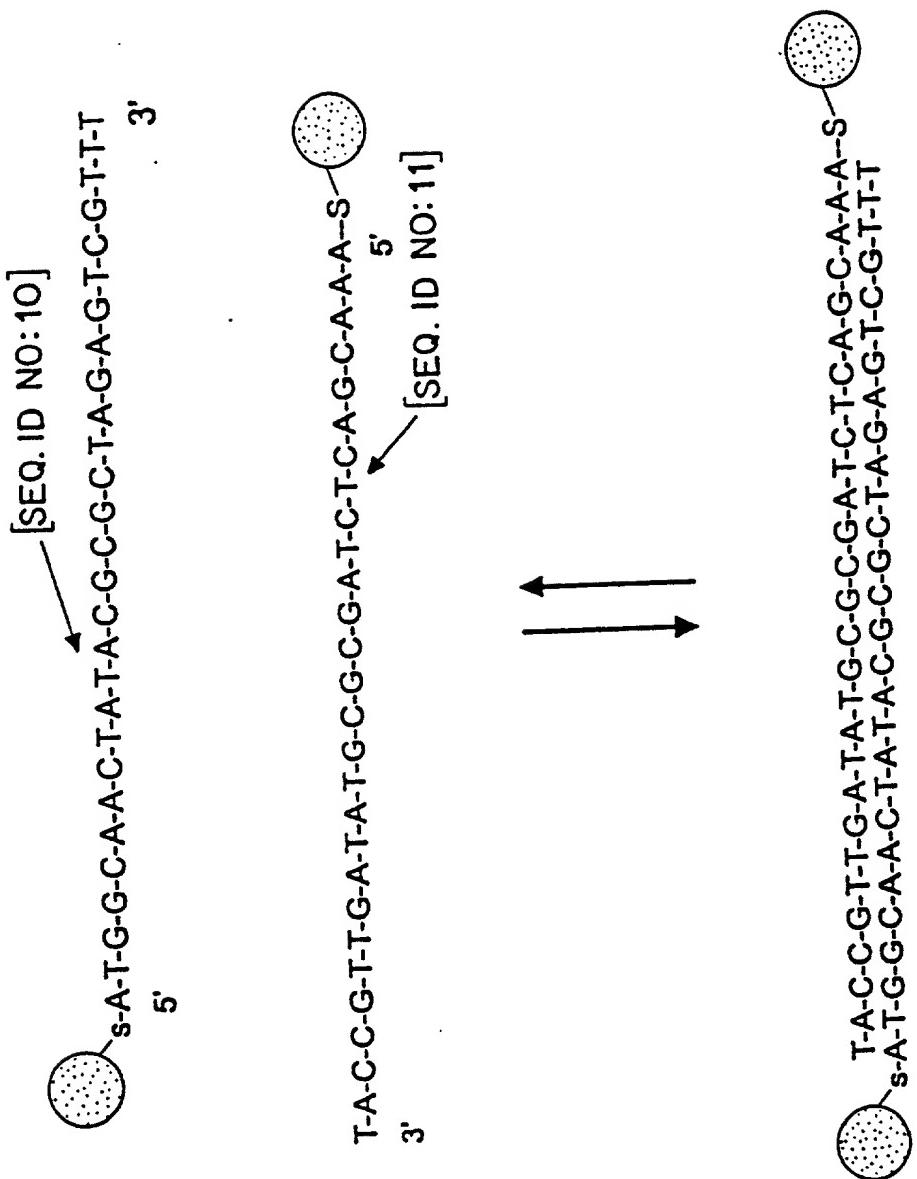


FIG. 12A

Complementary Target

[SEQ. ID NO:12]

1

3' T-C-G-T-A-C-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

3

[SEQ. ID NO:14]

2

[SEQ. ID NO:13]

FIG. 12B

Probes without Target

1

3' T-C-G-T-A-C-C-C-A-G-C-T-A-T-C-C

2

T-T-T-G-C-T-G-A-G-A-T-C-G-C-G

FIG. 12C

Half Complementary Target

1

3' T-C-G-T-A-C-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-T-G-G-C-A-A-C-T-A-T-A-C-G-C

4

2

[SEQ. ID NO:15]

FIG. 12D

Target - 6 bp

1

3' T-C-G-T-A-C-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
5' G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

5

2

[SEQ. ID NO:16]

FIG. 12E

One bp Mismatch

1

3' T-C-G-T-A-C-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
5' A-G-C-A-T-G-G-T-T-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

6

2

[SEQ. ID NO:17]

FIG. 12F

Two bp Mismatch

1

3' T-C-G-T-A-C-C-C-A-G-C-T-A-T-C-C T-T-T-G-C-T-G-A-G-A-T-C-G-C-G
5' A-G-C-A-T-G-T-T-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

7

2

[SEQ. ID NO:18]

FIG.13A

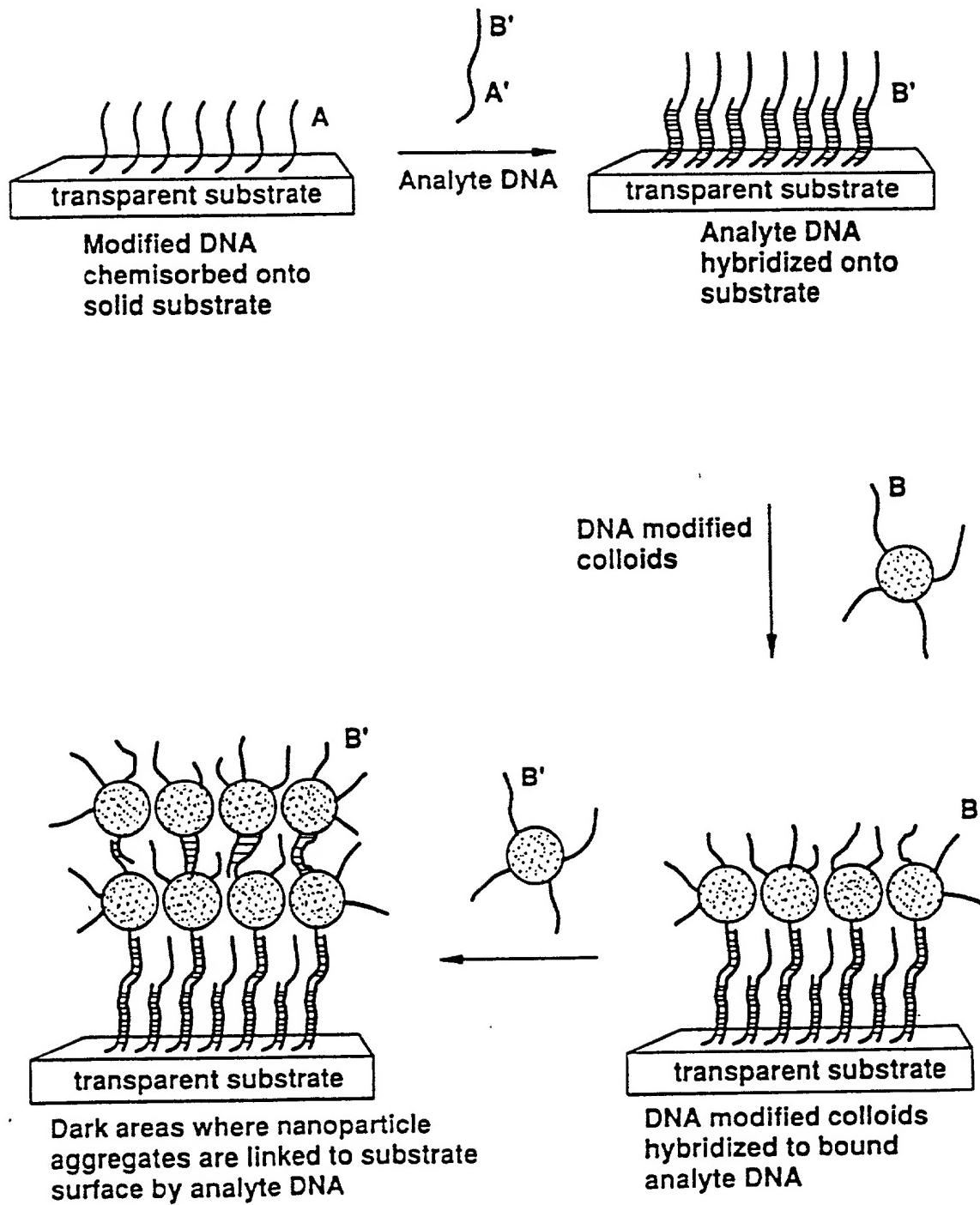


FIG. 13B

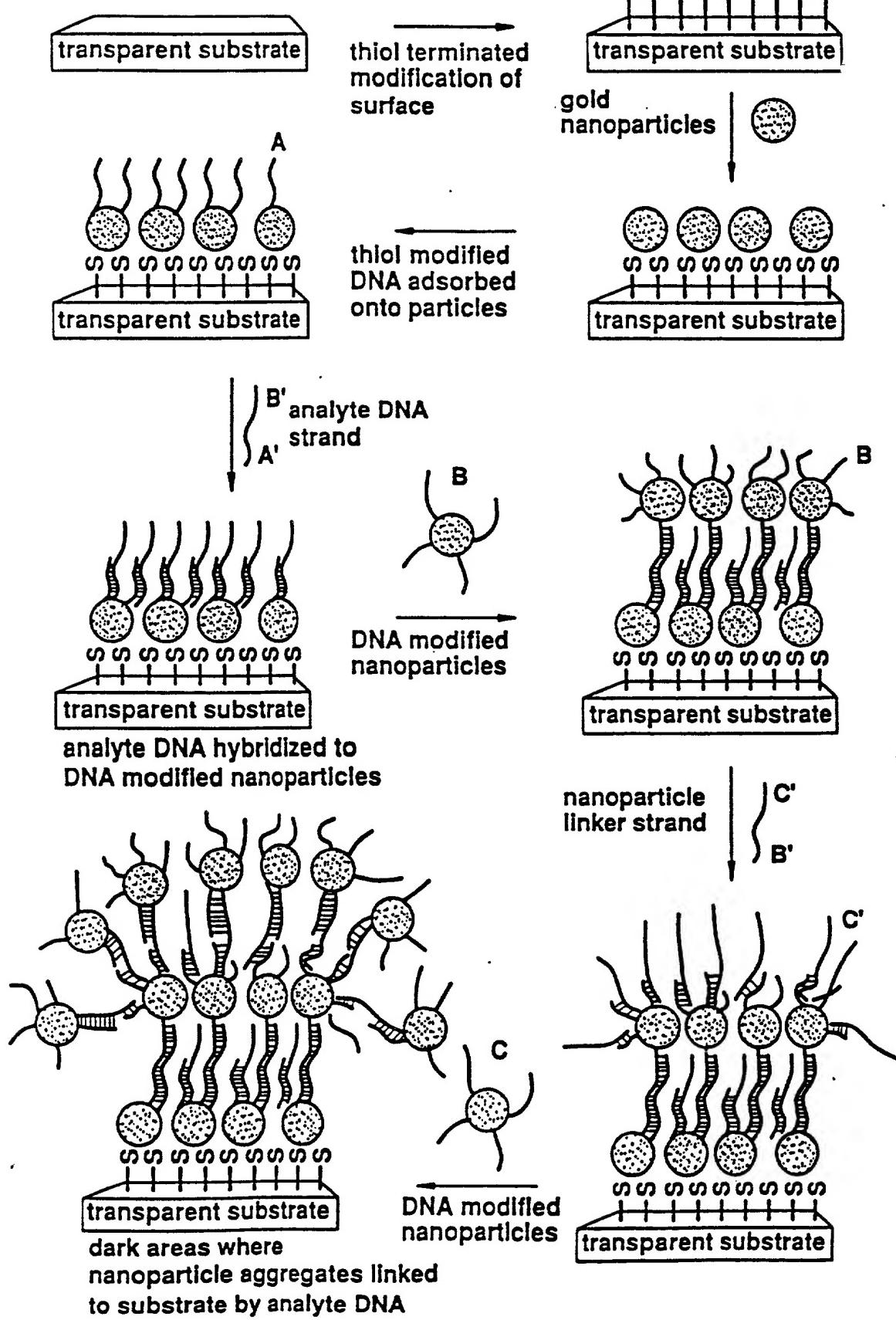


FIG.14A

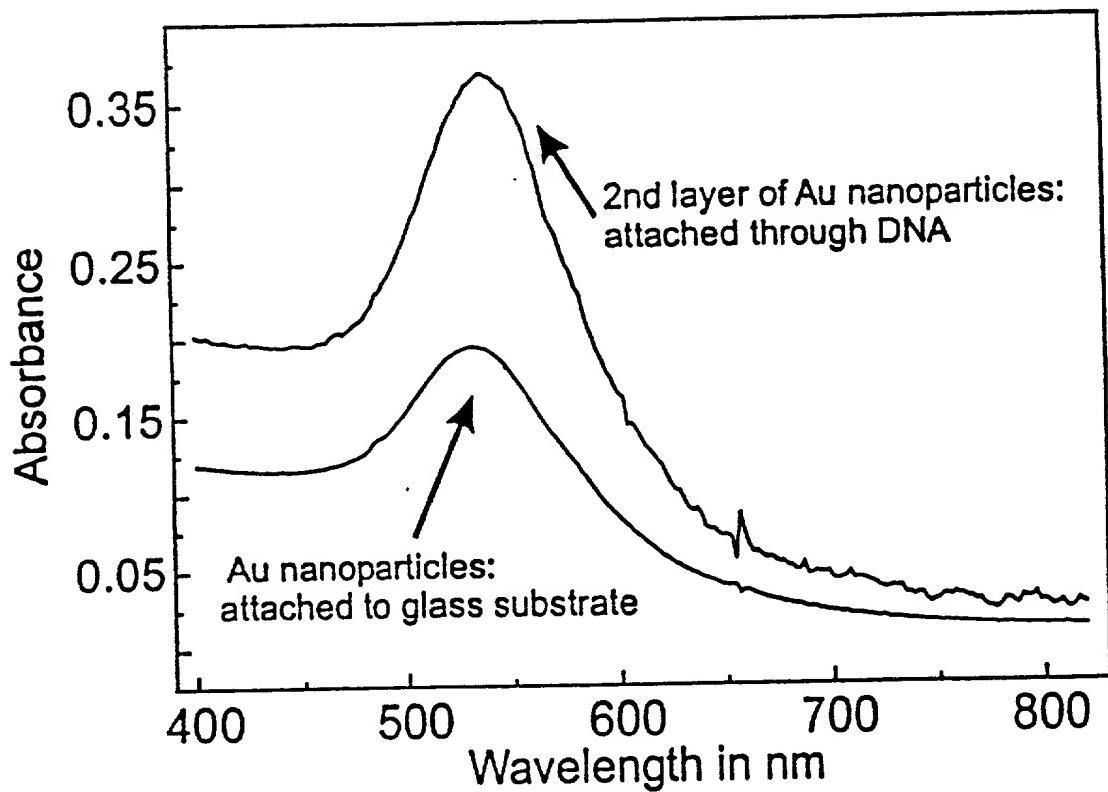


FIG.14B

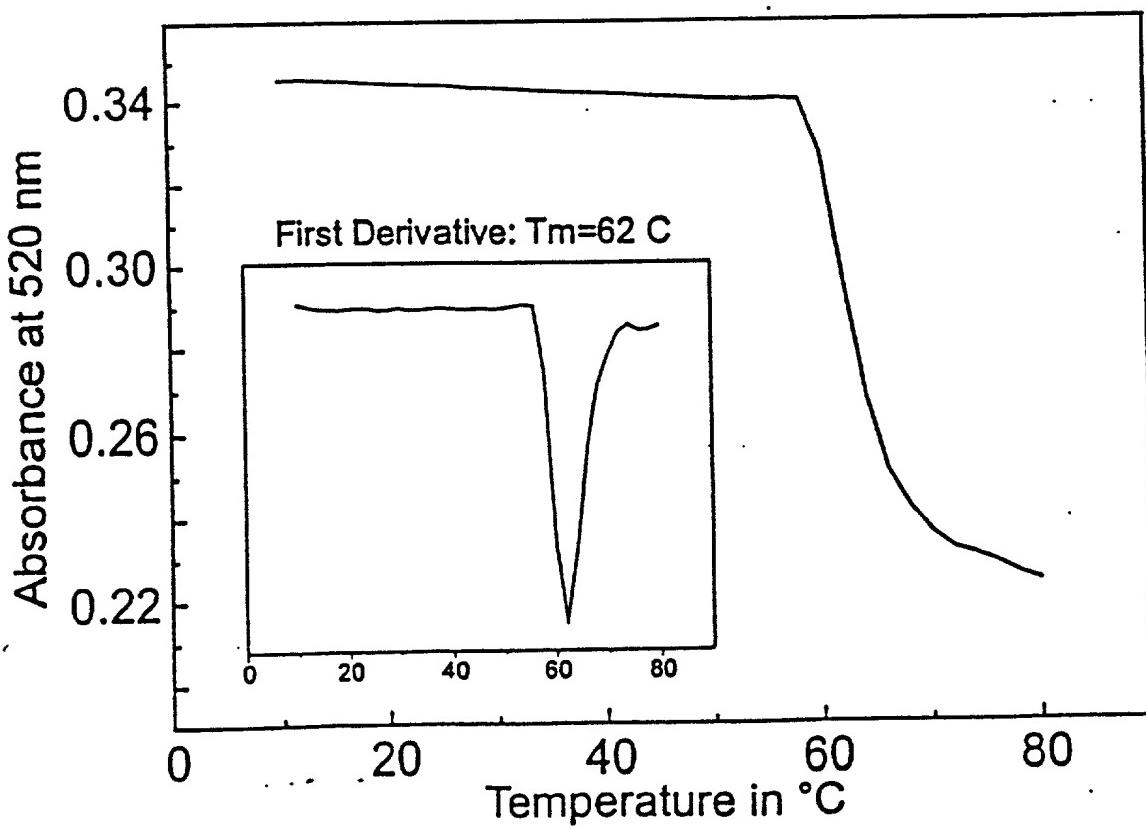


FIG15A

Probes with No Target

SEQ ID NO:19

SEQ ID NO:20

S-ATG-CTC-AAC-TCT

TAG-GAC-TTA-CGC-S

1

2

FIG15B

Half-Complementary Target

3

SEQ ID NO:21

5' TAC-GAG-TTG-AGA-GAG-TGC-CCA-CAT 3'

S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S

1

2

FIG15C

Complementary Target

Tm=53.5°C

4

SEQ ID NO:22

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG 3'

S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S

1

2

FIG15D

ONE Base-Pair Mismatch at Probe Head

Tm=50.4°C

5

SEQ ID NO:23

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCT 3'

S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S

1

2

FIG15E

ONE Base-Pair Mismatch at Probe Tail

Tm=46.2°C

6

SEQ ID NO:24

5' TAC-GAG-TTG-AGA-CTC-CTG-AAT-GCG 3'

S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S

1

2

FIG15F

ONE Base Deletion

Tm=51.6°C

7

SEQ ID NO:25

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GC□ 3'

S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S

1

2

FIG15G

ONE Base-Pair Insertion

Tm=50.2°C

8

SEQ ID NO:26

5' TAC-GAG-TTG-AGA-CAT-CCT-GAA-TGC-G 3'

S-ATG-CTC-AAC-TCT TA-GGA-CTT-ACG-C-S

1

2

FIG. 16A

24 Base Template

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG 3'
-S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S -
1
2

FIG. 16B 48 Base Template with Complementary 24 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-ATC-CTG-AAT-GCG 3'
-S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT TAG-GAC-TTA-CGC-S -
1
2

FIG. 16C

72 Base Template with Complementary 48 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-TAT-ATT-GGA-CGC-TTT-ACG-GAC-AAC-ATC-CTG-AAT-GCG 3'
-S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT-TAA-CCT-GCG-AAA-TGC-CTG-TAG-GAC-TTA-CGC-S -
1
2

FIG. 17A

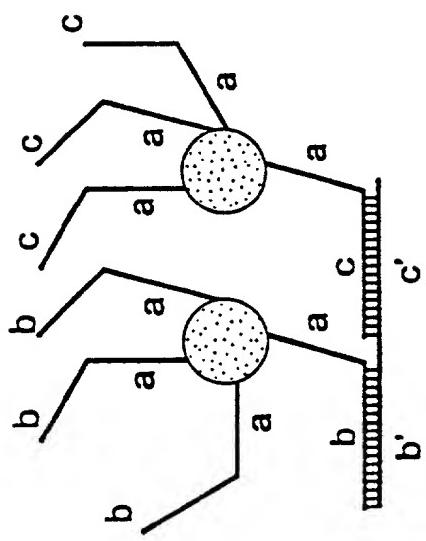


FIG. 17B

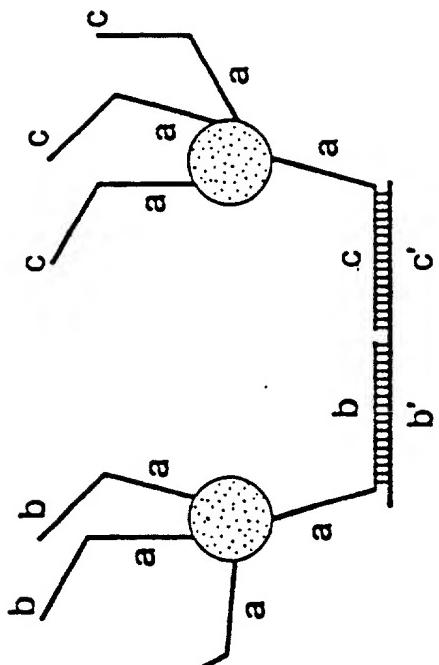


FIG. 17C

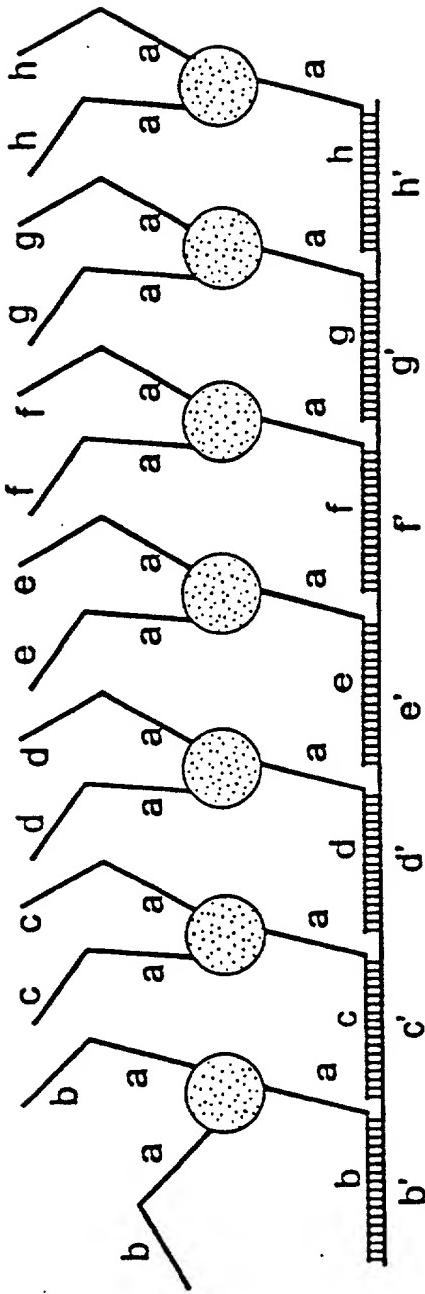


FIG. 17D

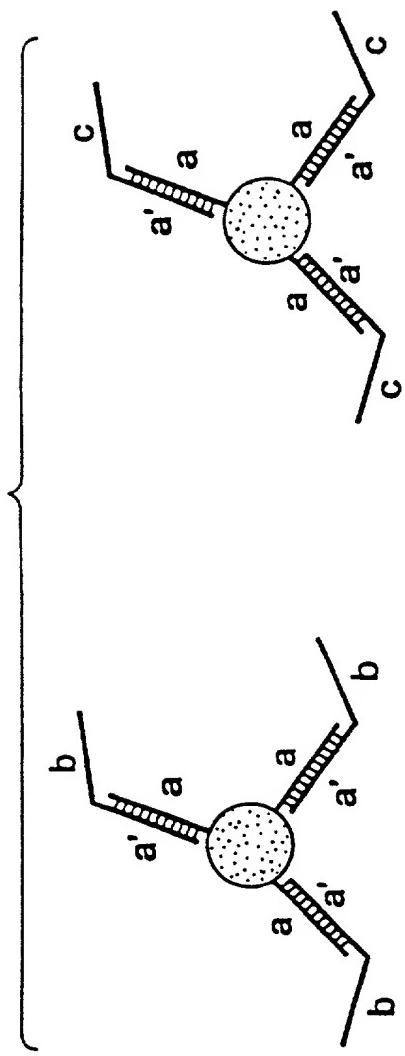


FIG. 17E

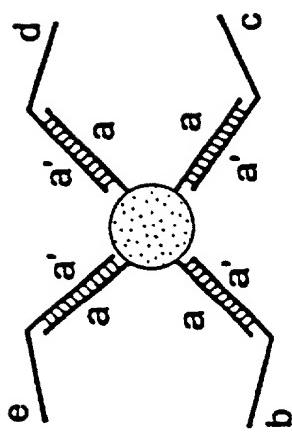


FIG.18

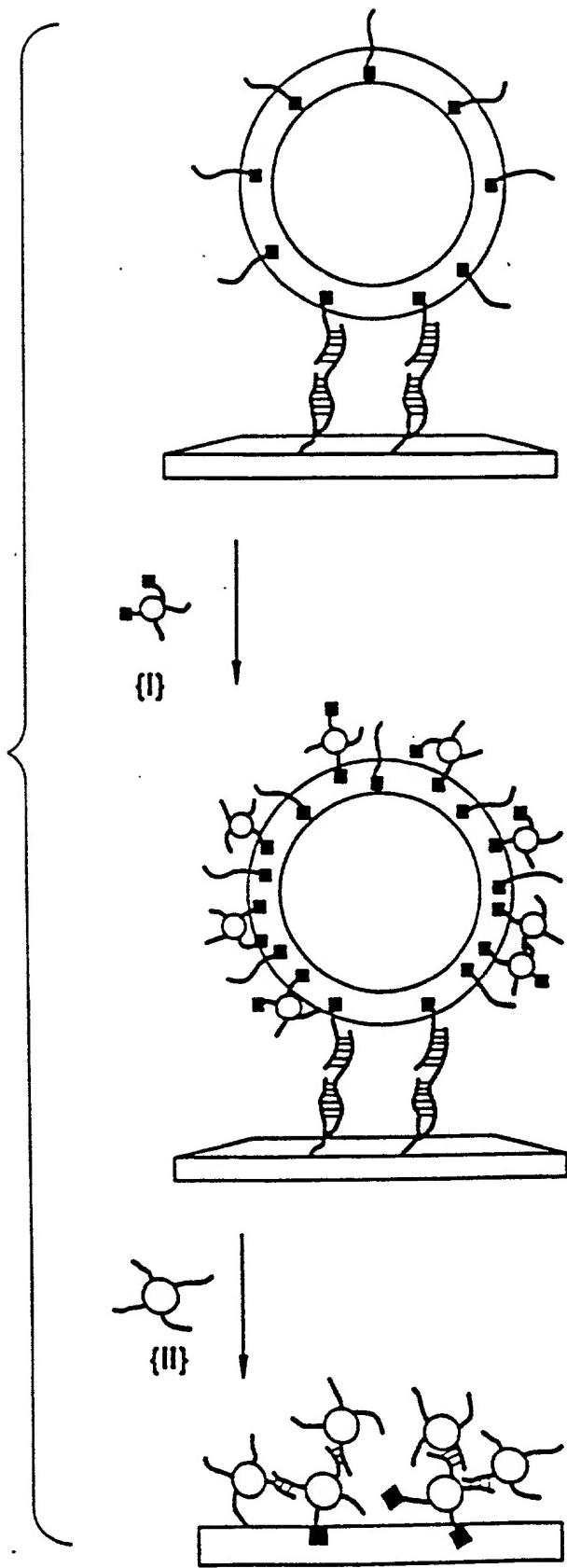


FIG.19A

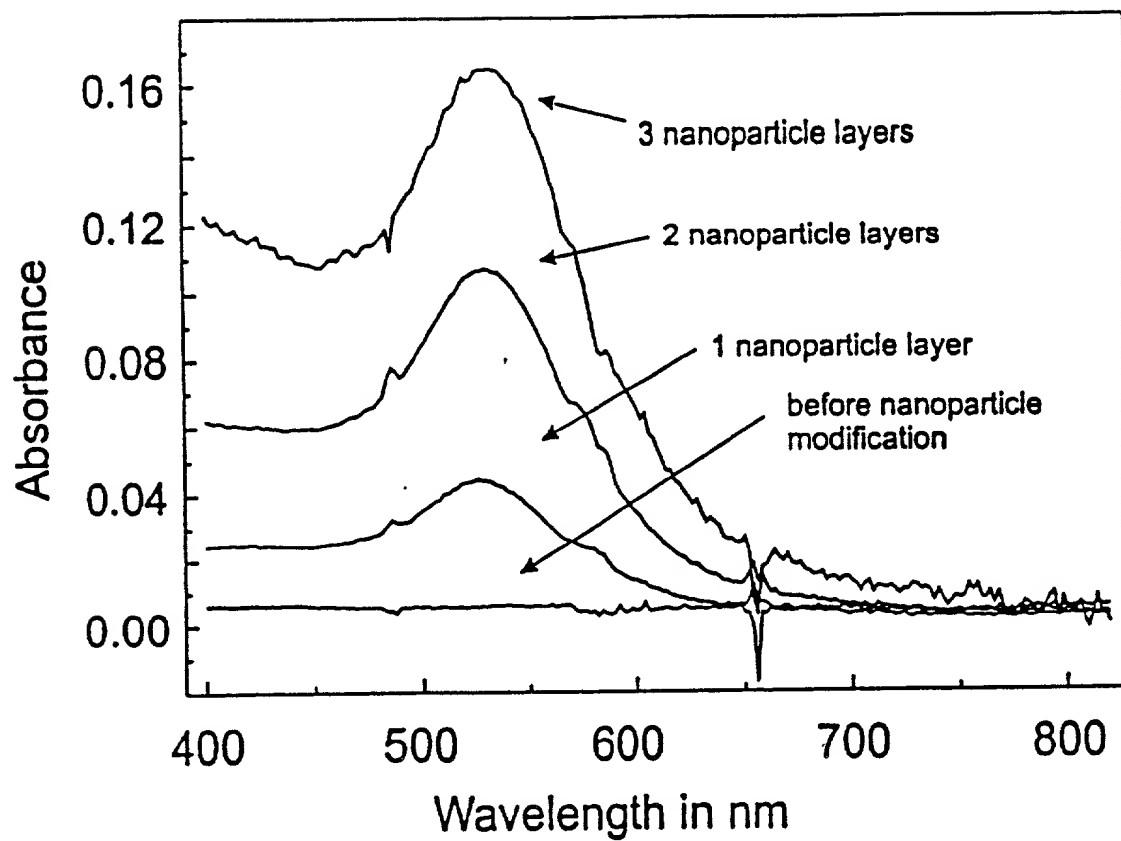


FIG.19B

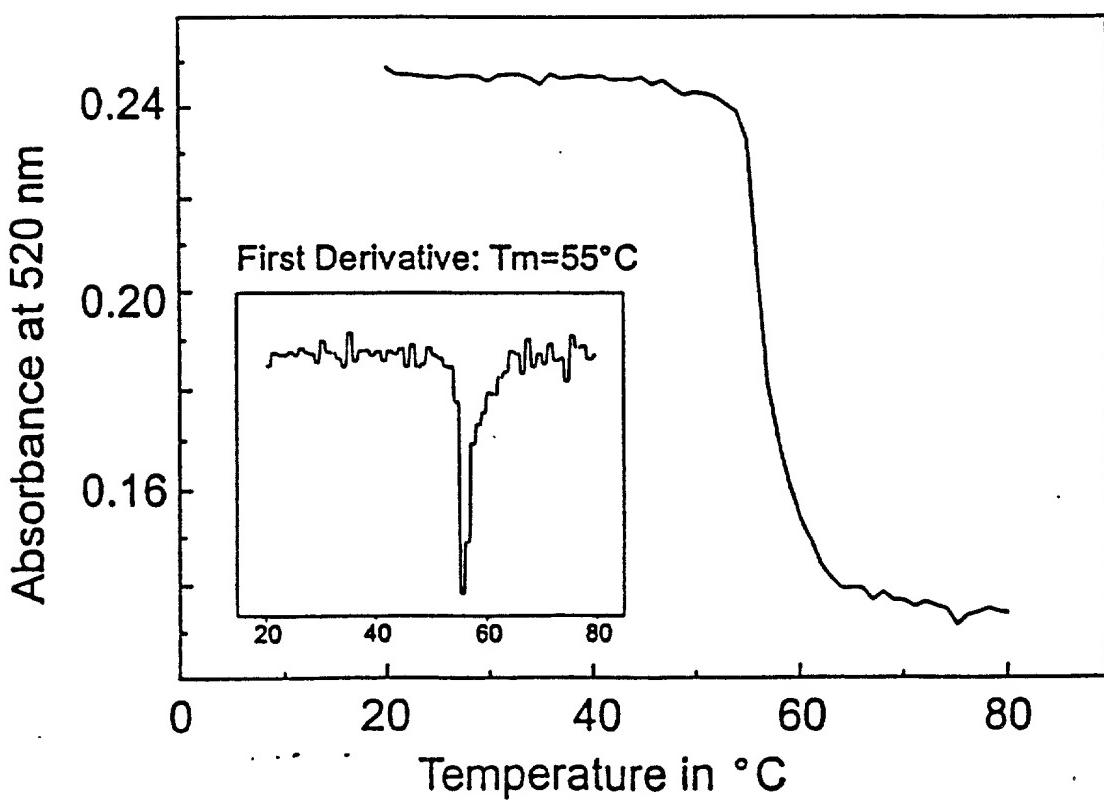


FIG.20A

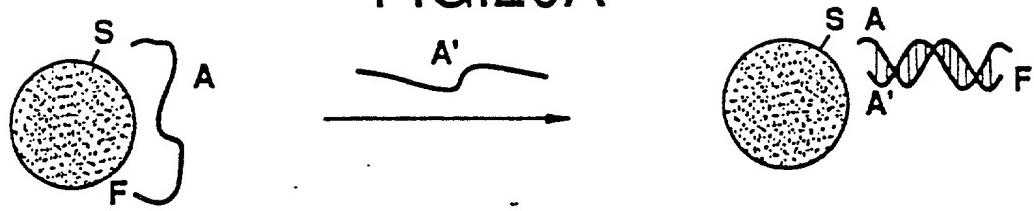
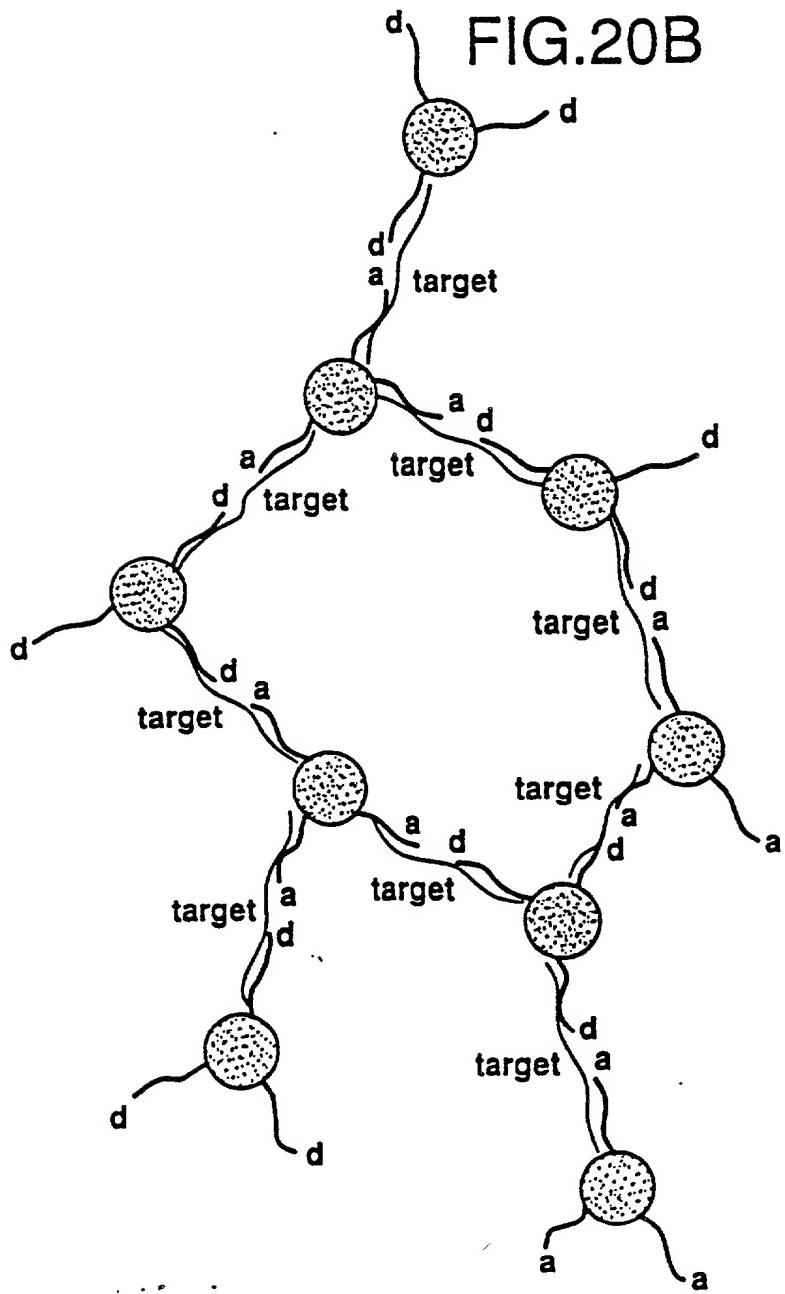


FIG.20B



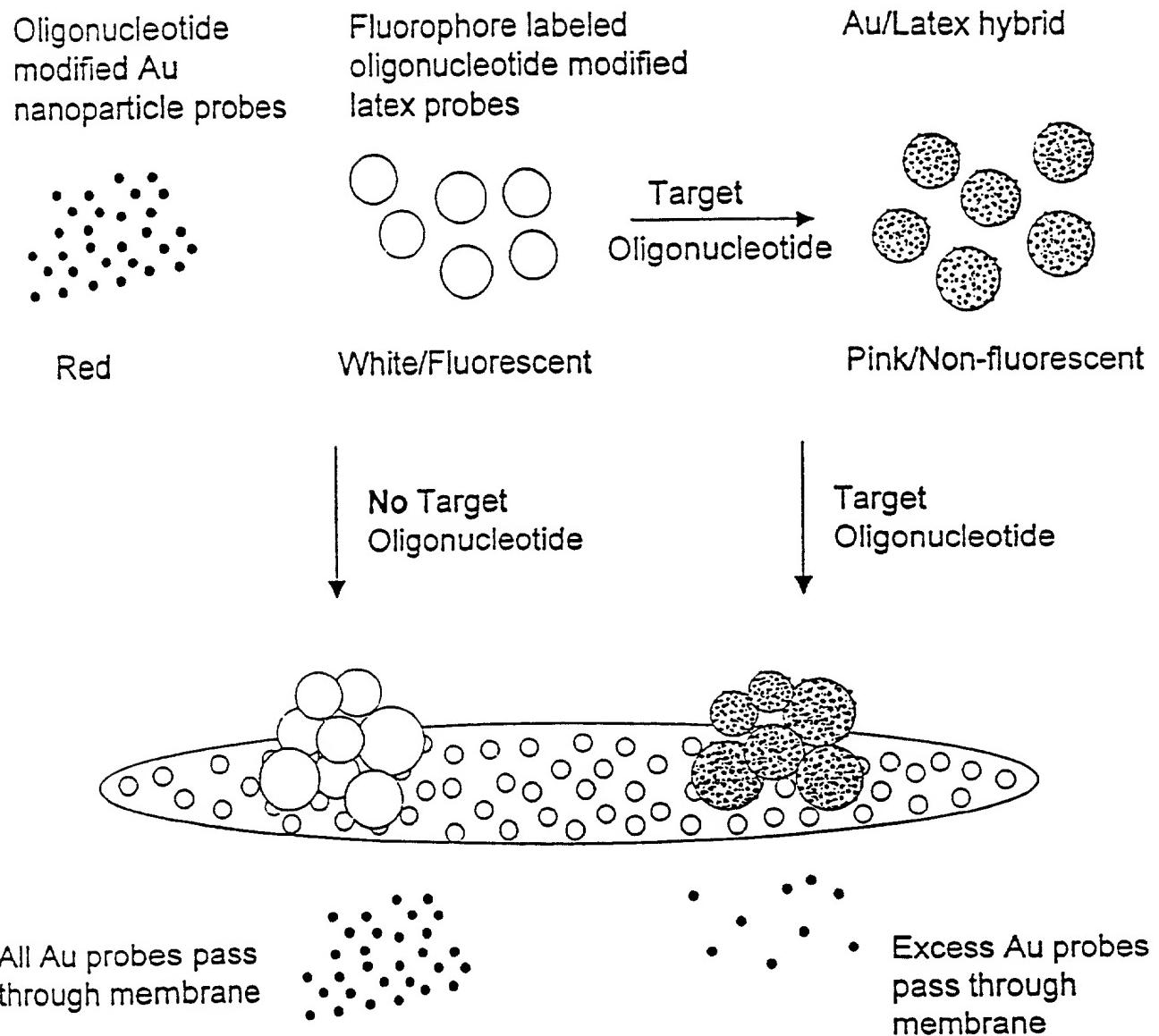
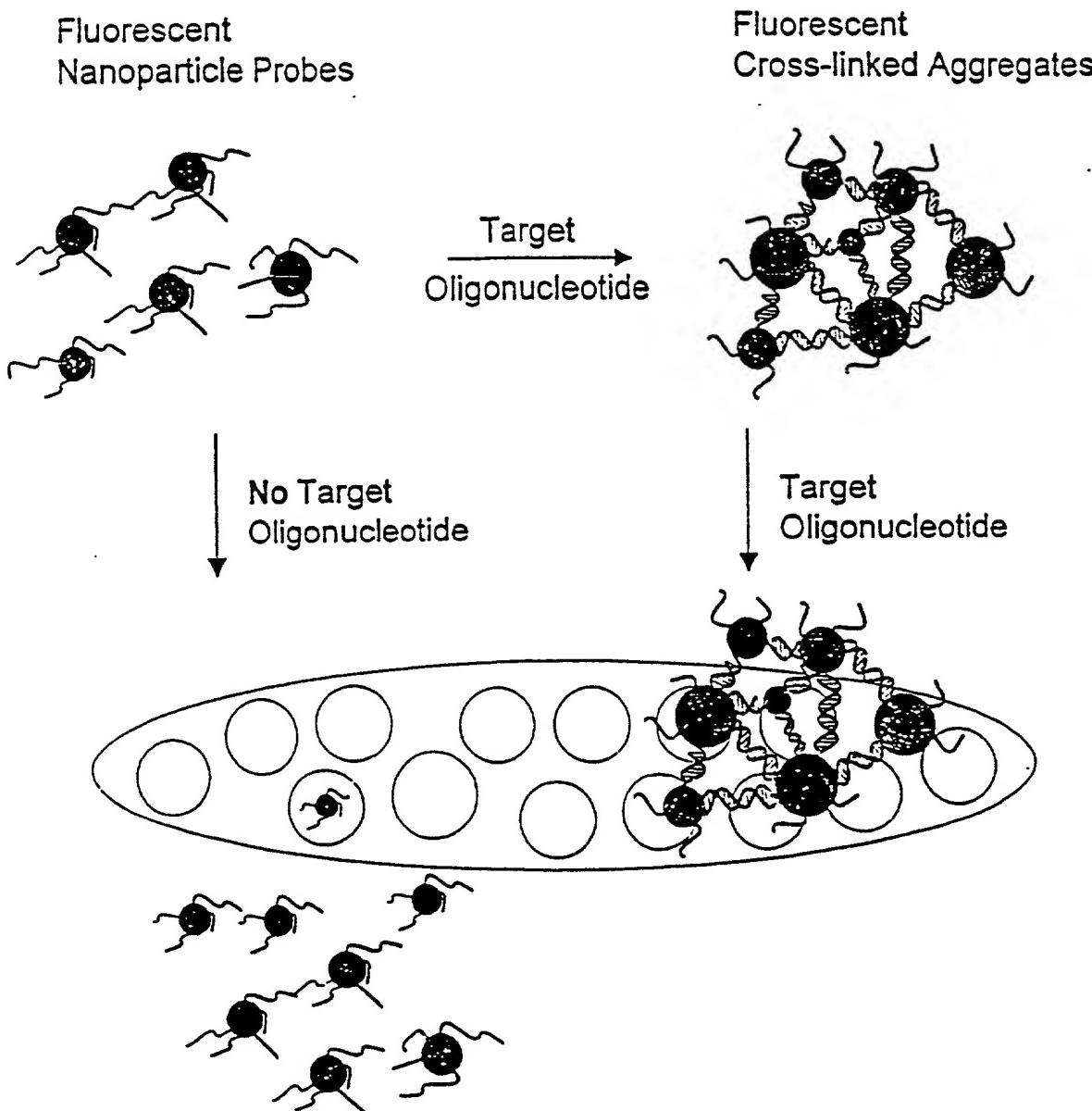


FIGURE 21

FIGURE 22



The fluorescent nanoparticle probes pass through the membrane

The fluorescent cross-linked aggregates are retained by the membrane

Anthrax PCR Product

5'G GCG GAT GAG TCA GTA GTT AAG GAG GCT CAT AGA GAA GTA ATT AAT
3'C CGC CTA CTC AGT CAT CAA TTC CTC CGA GTA TCT CTT CAT TAA TTA

TCG TCA ACA GAG GGA TTA TTG TTA AAT ATT GAT AAG GAT ATA AGA AAA
AGC AGT TGT CTC CCT AAT AAC AAT TTA TAA CTA TTC CTA TAT TCT TTT

ATA TTA TCC AGG GTT ATA TTG TAG AAA TTG AAG ATA CTG AAG GGC TT 3'
TAT AAT AGG TCC CAA TAT AAC ATC TTT AAC TTC TAT GAC TTC CCG AA 5'

141 mer Anthrax PCR product [SEQ ID NO:36]



Blocker Oligonucleotides

- | | |
|---|----------------|
| 3' C CGC CTA CTC AGT CAT CAA TTC CTC CGA GT | [SEQ ID NO:39] |
| 3' A TCT CTT CAT TAA TTA AGC AGT TGT | [SEQ ID NO:40] |
| 3' TAT TCT TTT TAT AAT AGG TCC CAA TAT | [SEQ ID NO:41] |
| 3' AAC ATC TTT AAC TTC TAT GAC TTC CCG AA | [SEQ ID NO:42] |

FIGURE 23

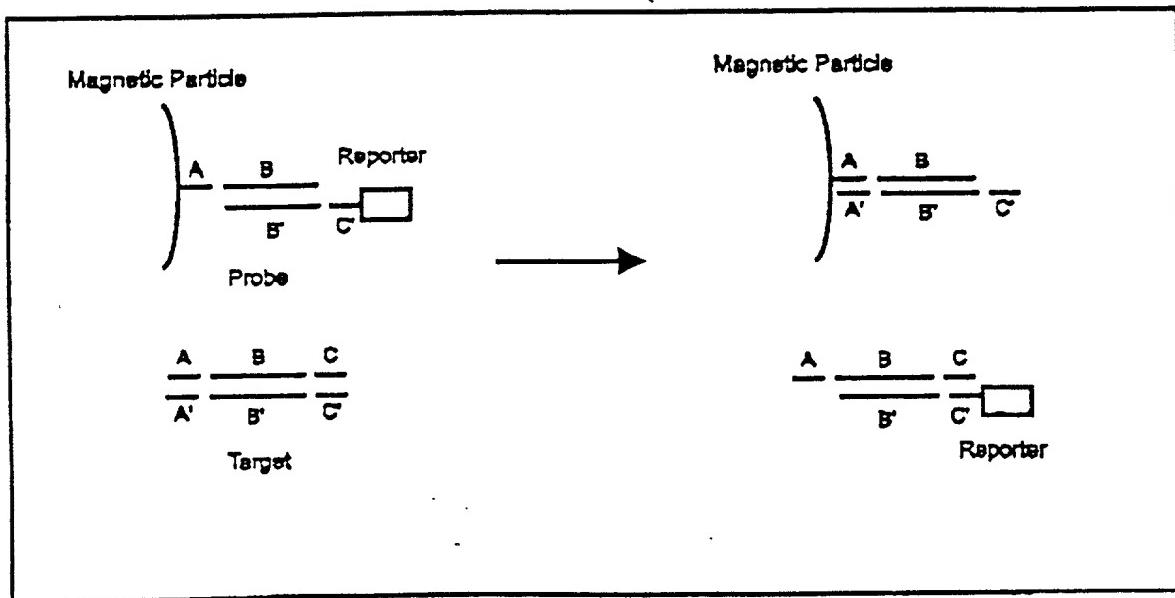
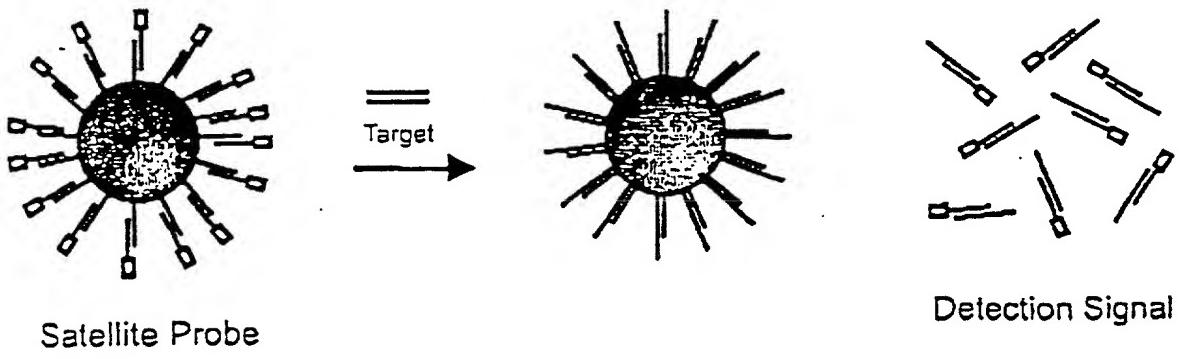


FIGURE 24

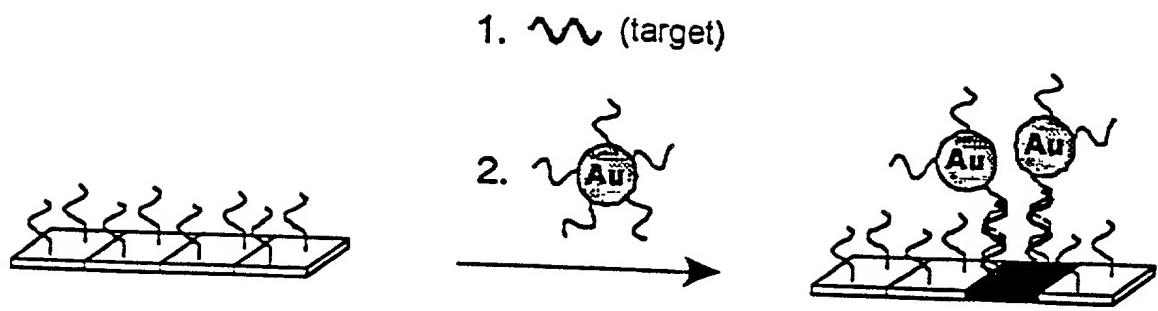


FIGURE 25A

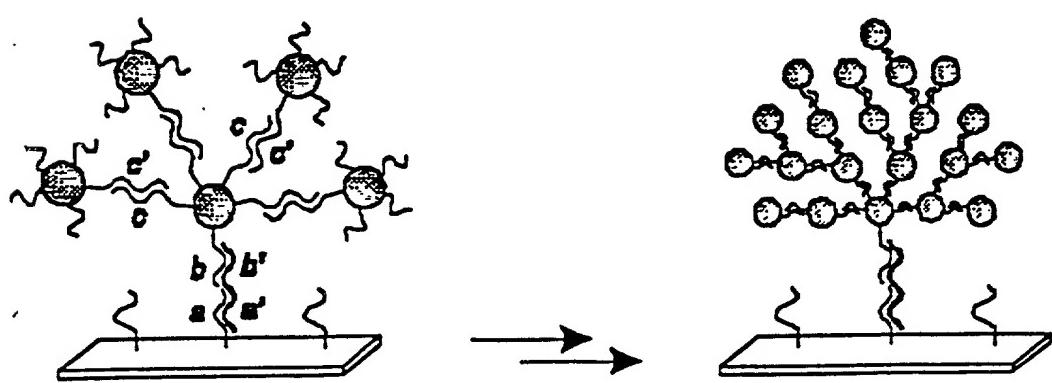
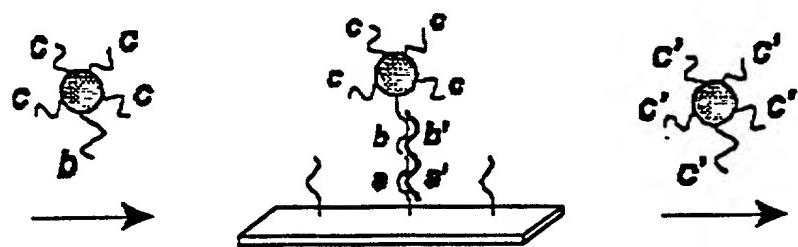
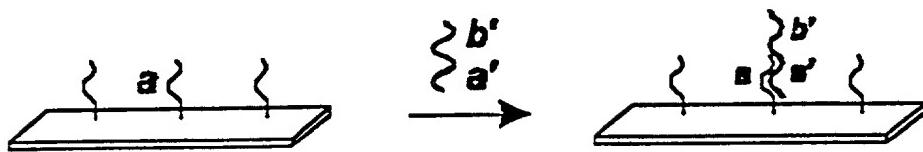


FIGURE 25B

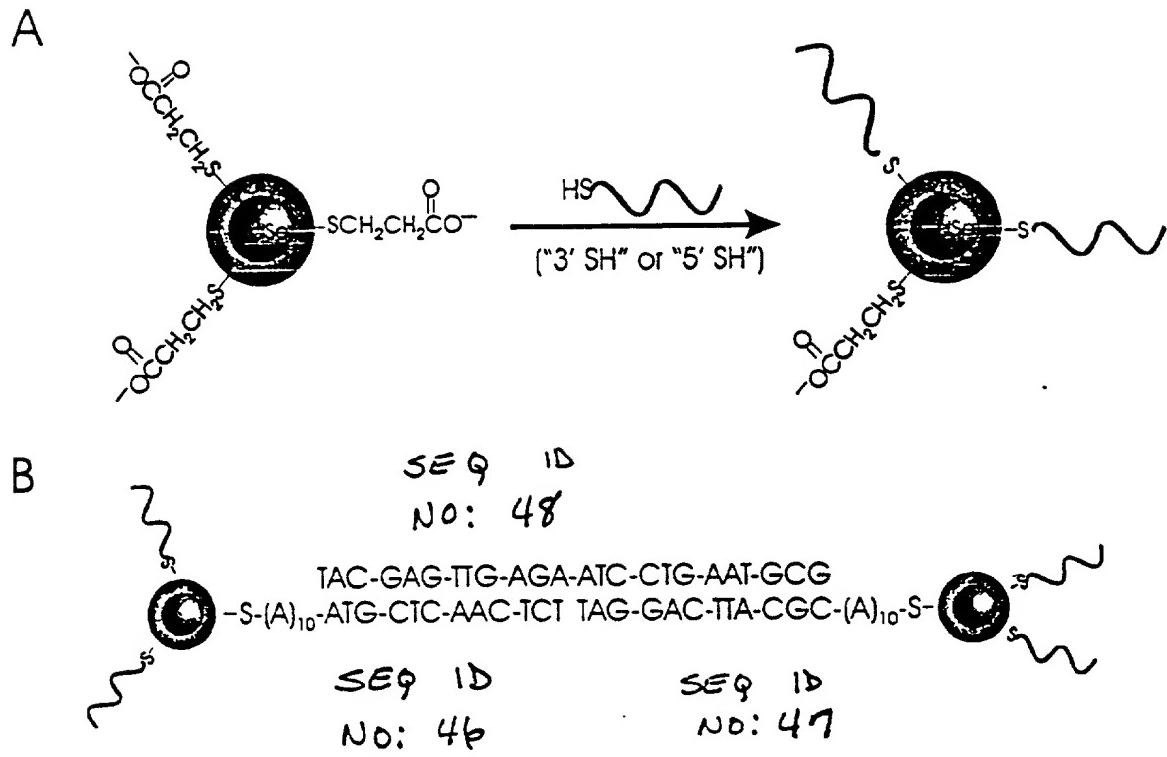


FIGURE 26

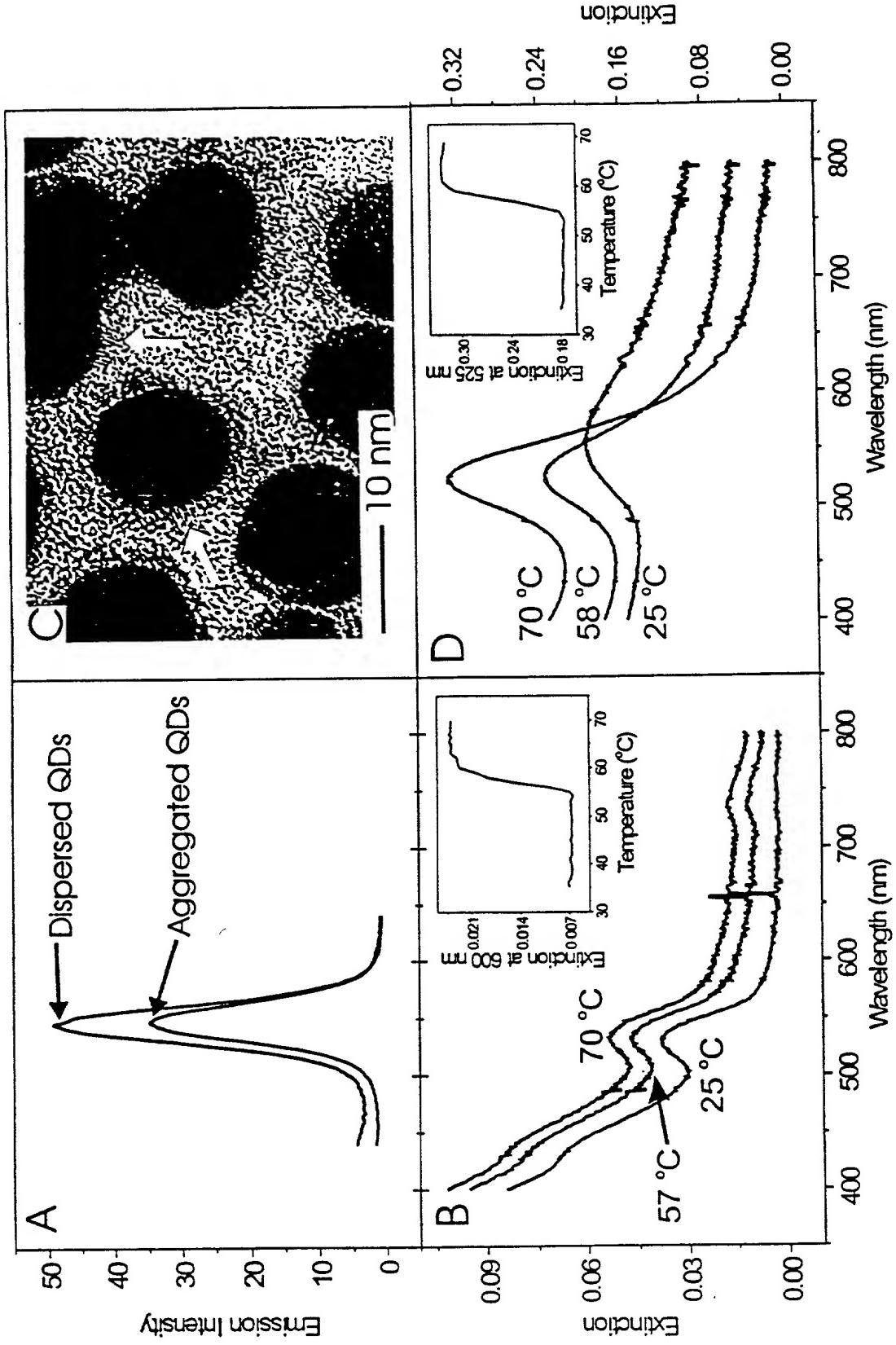


FIGURE 21

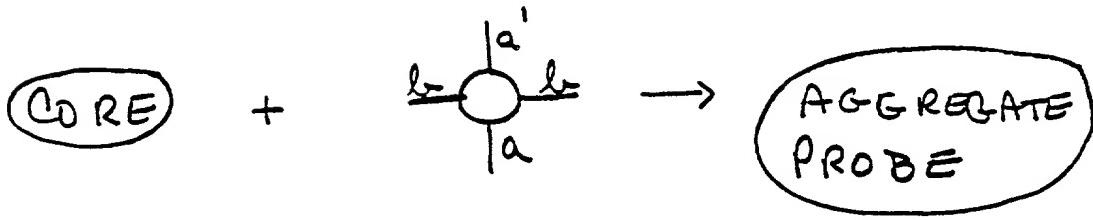
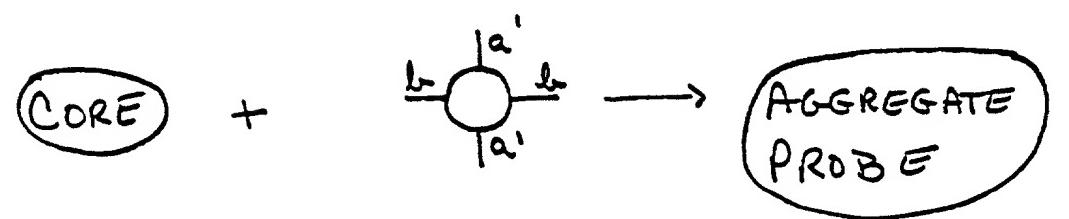
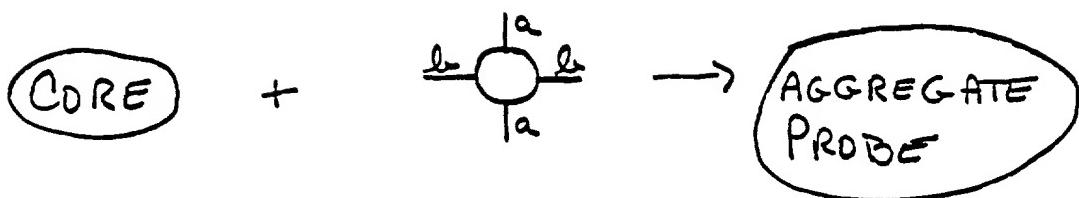
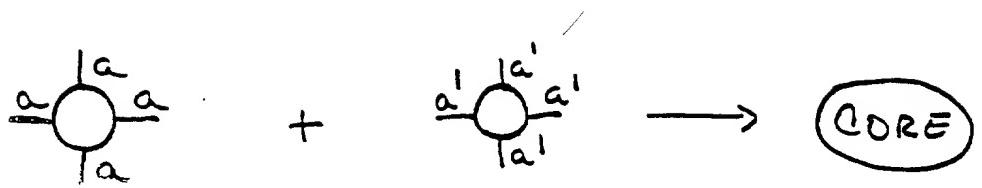


FIGURE 28A

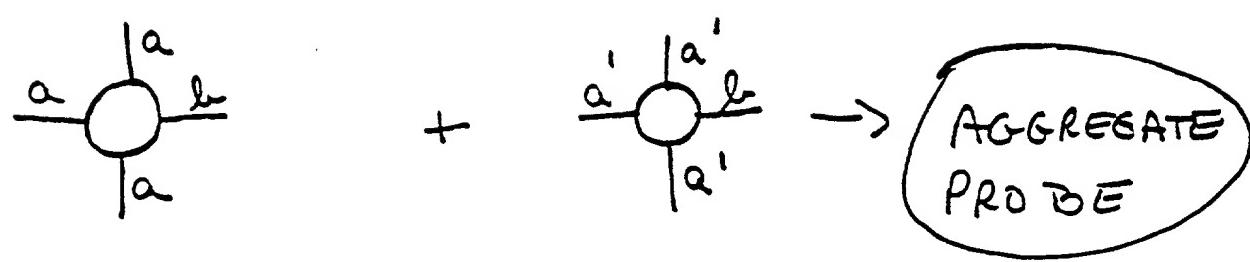


FIGURE 28B

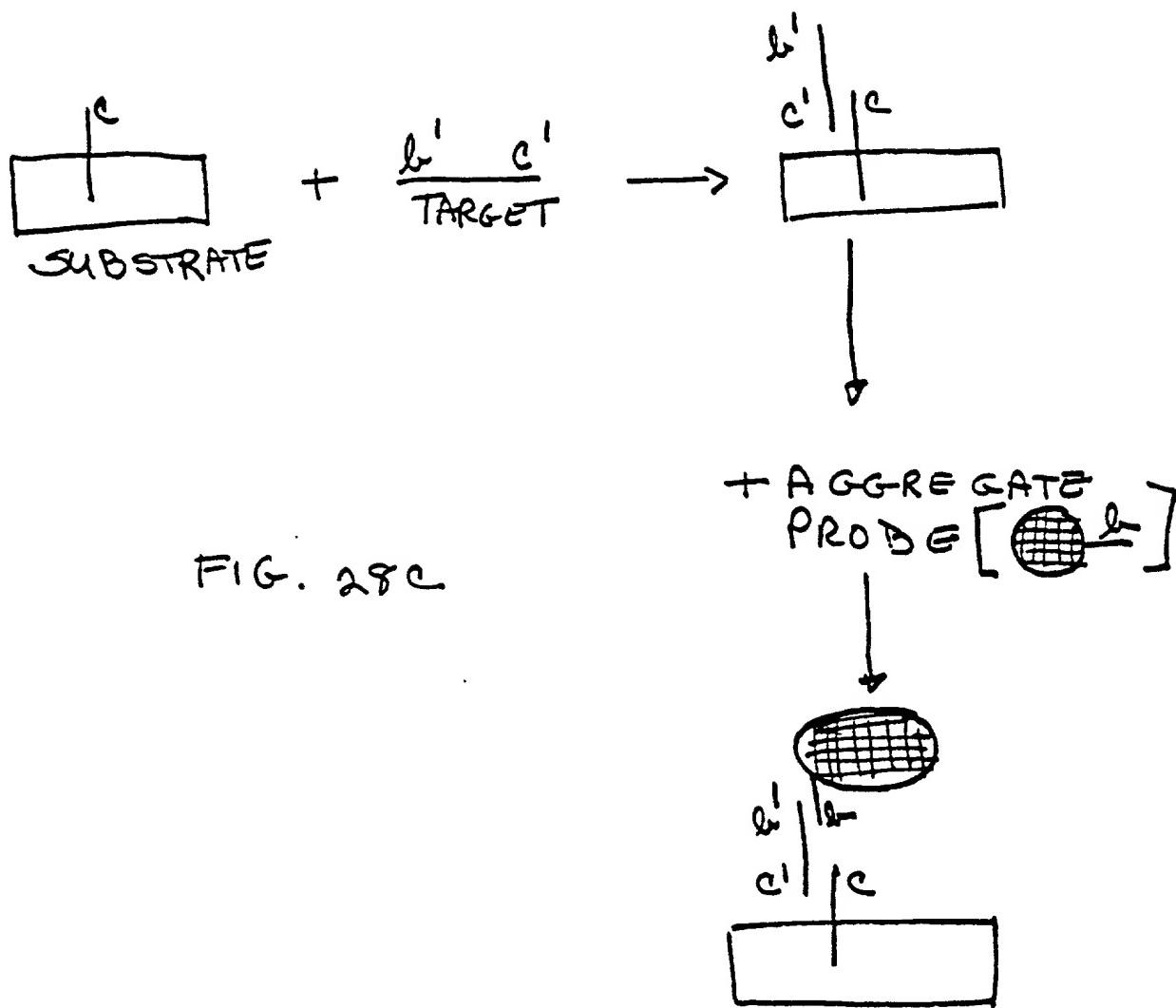


FIG. 28C

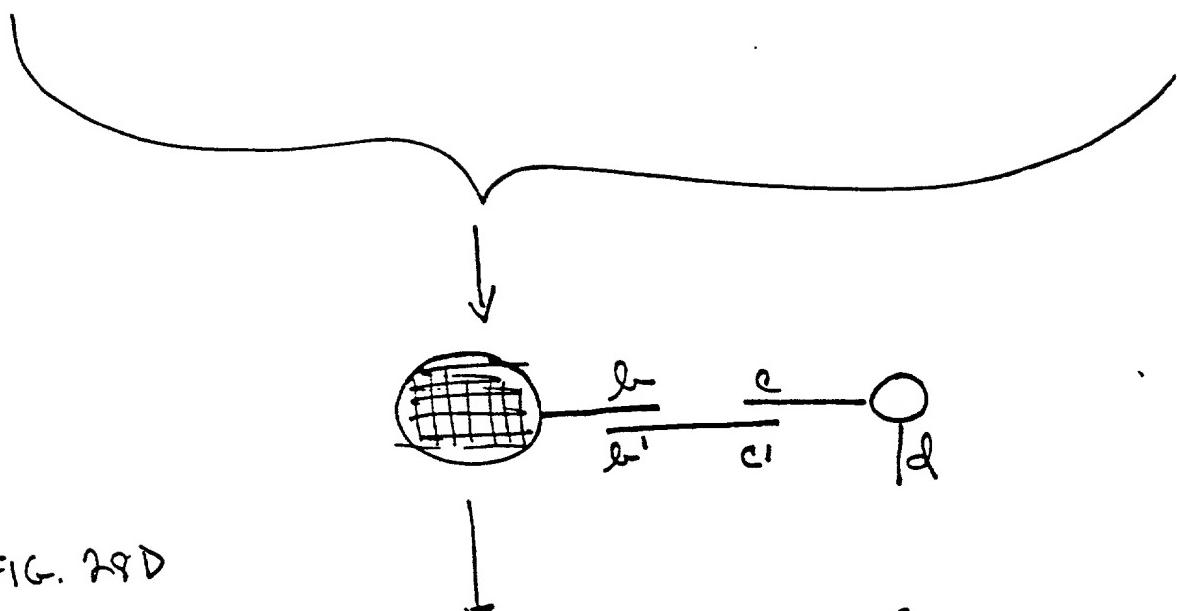
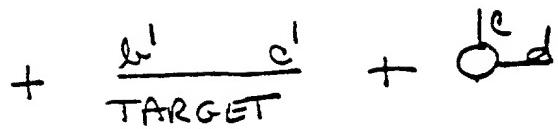
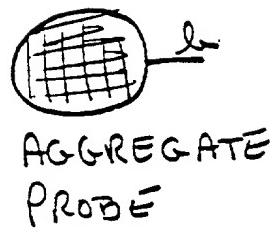
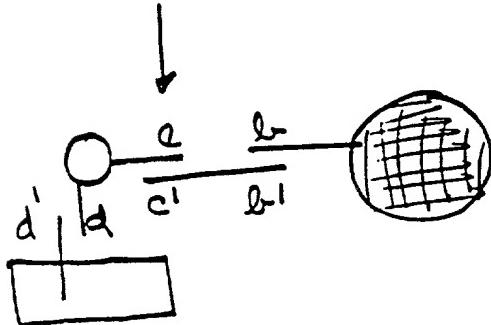
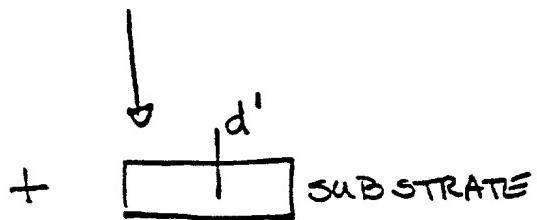


FIG. 29D

REMOVE EXCESS
BY CENTRIFUGATION



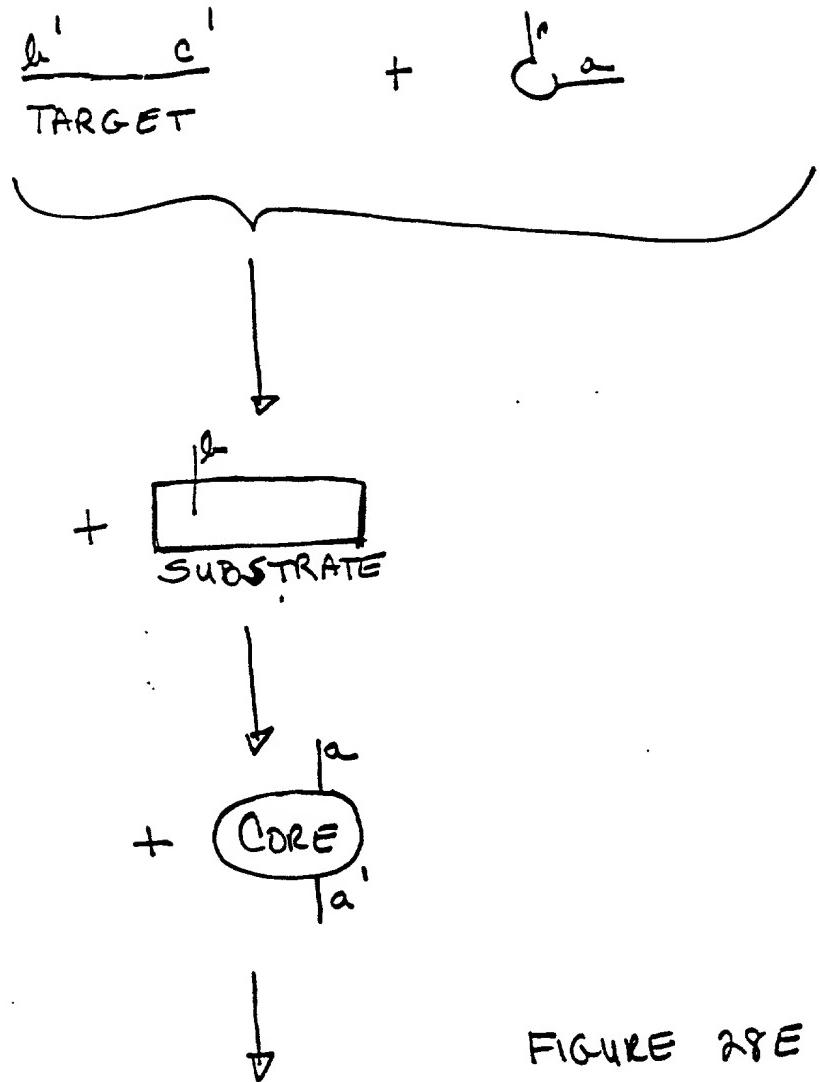


FIGURE 28E

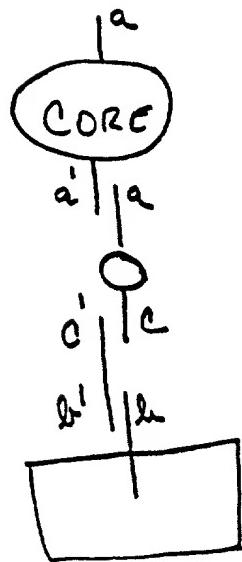
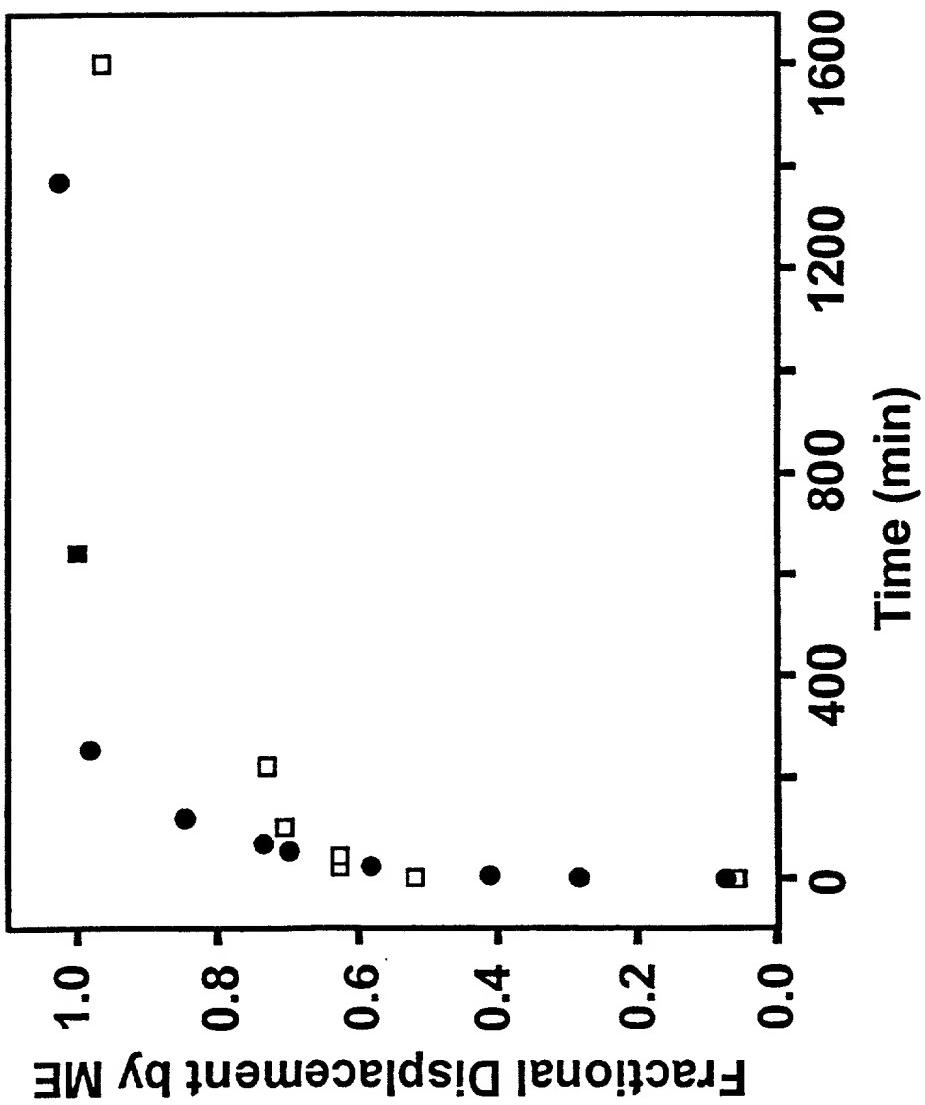


Figure 29



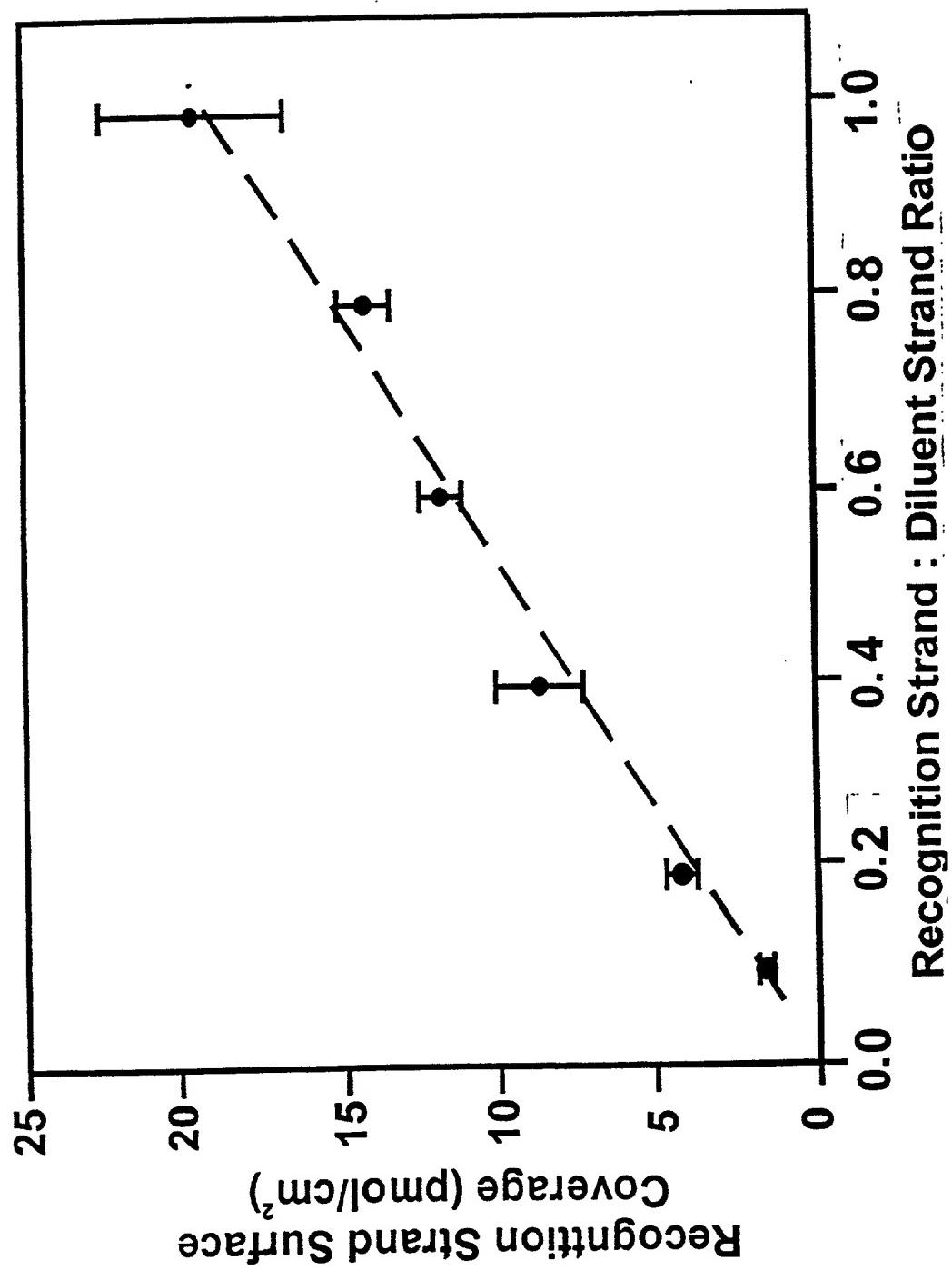
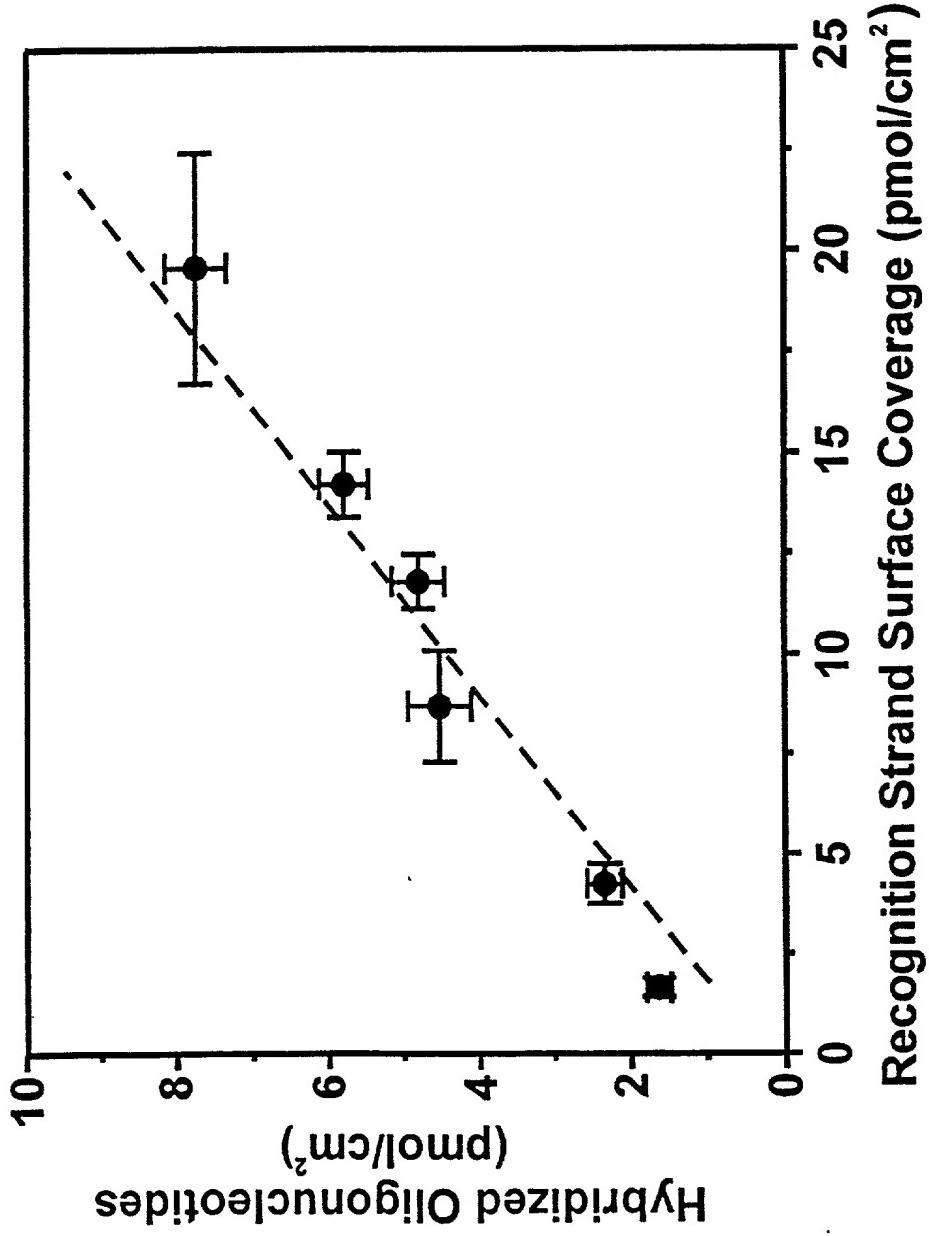
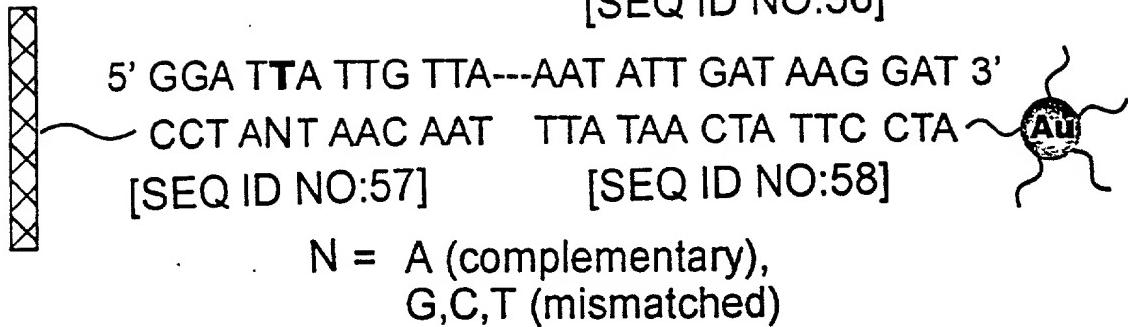


Figure 30

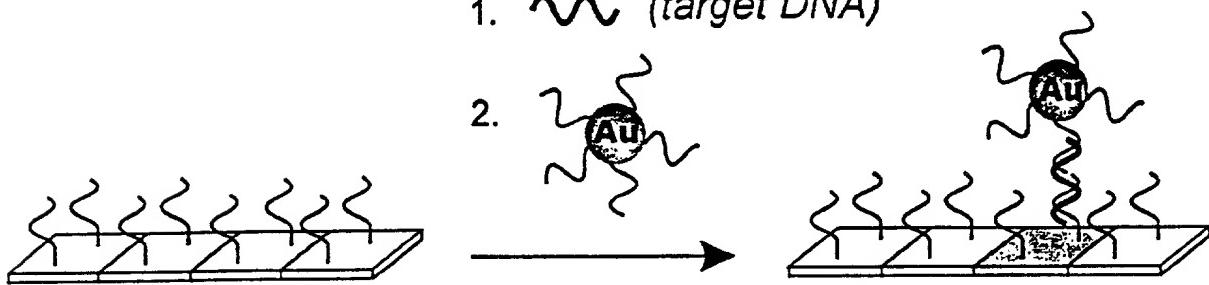
Figure 31



[SEQ ID NO:56]



1. (target DNA)



2.

Ag^+
hydroquinone
(pH 3.8)

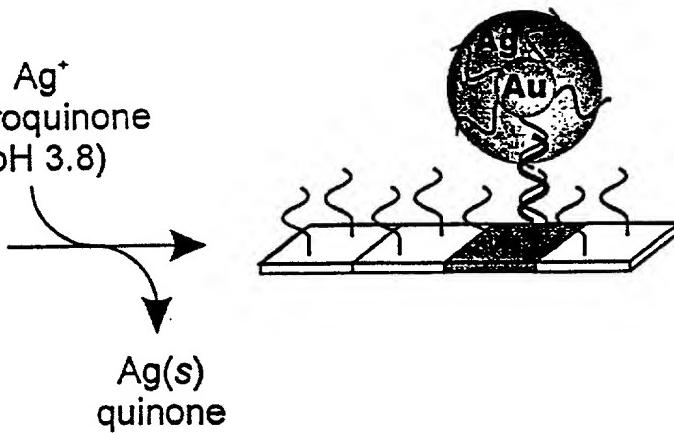


Figure 32

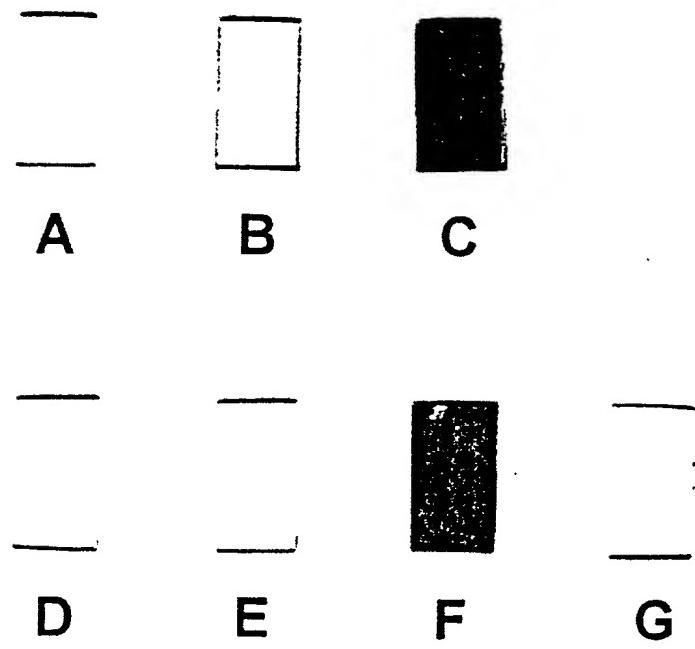
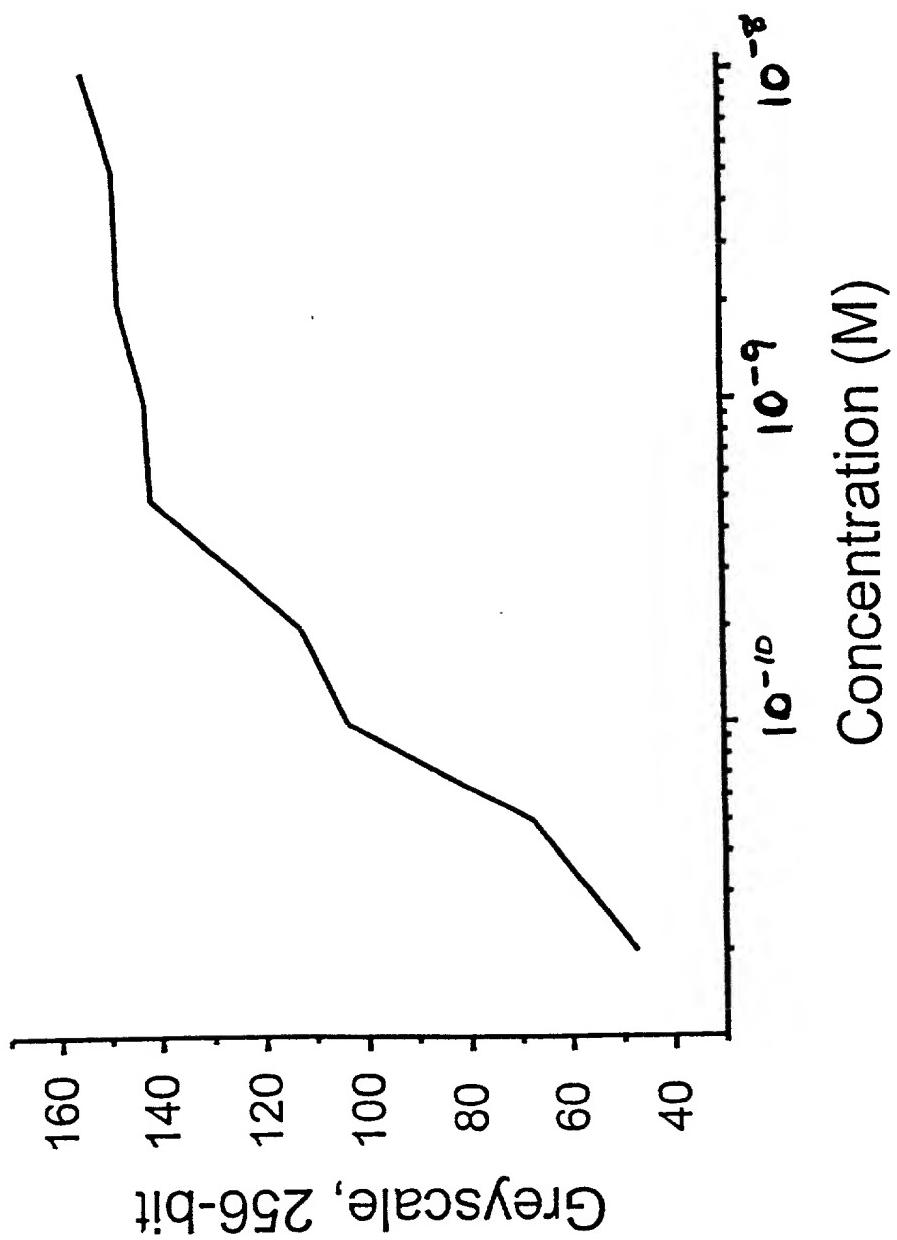


Figure 33

Figure 34



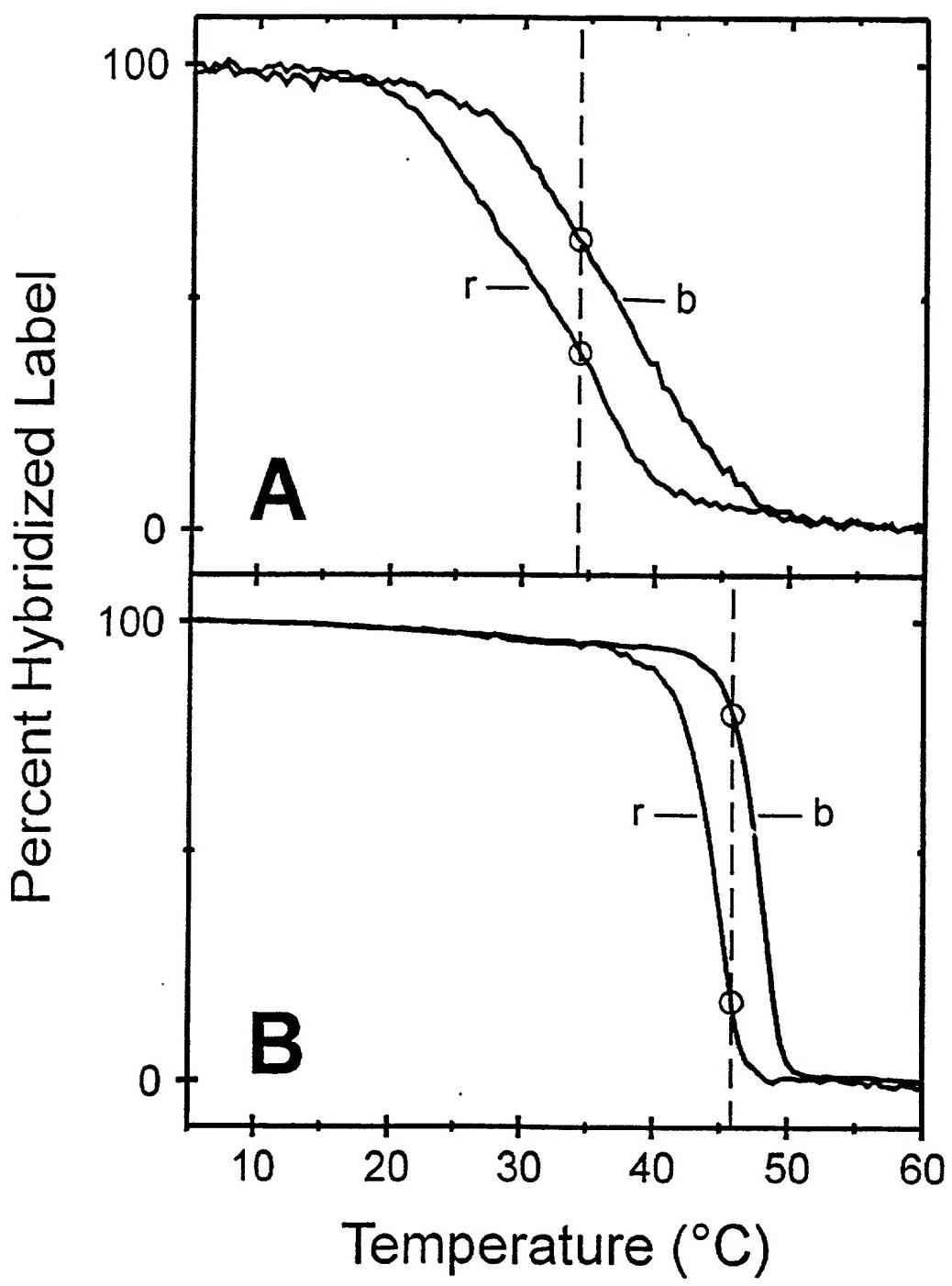


Figure 35

FIG. 36A

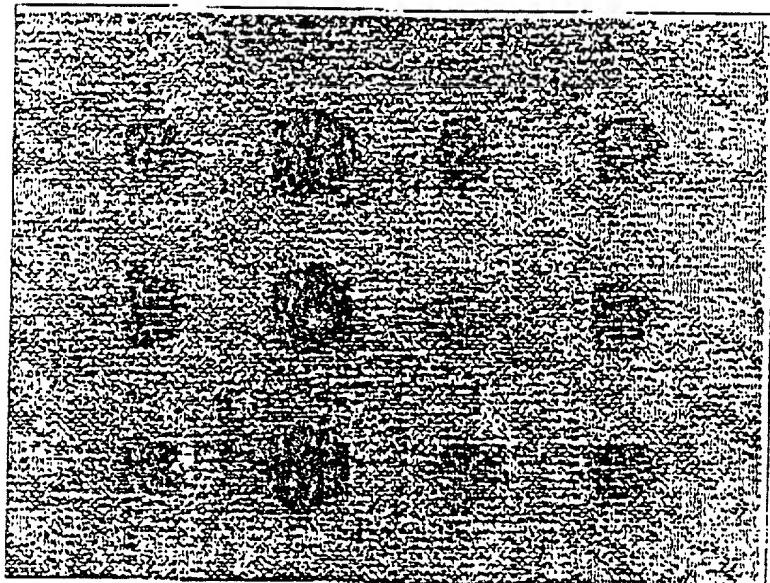
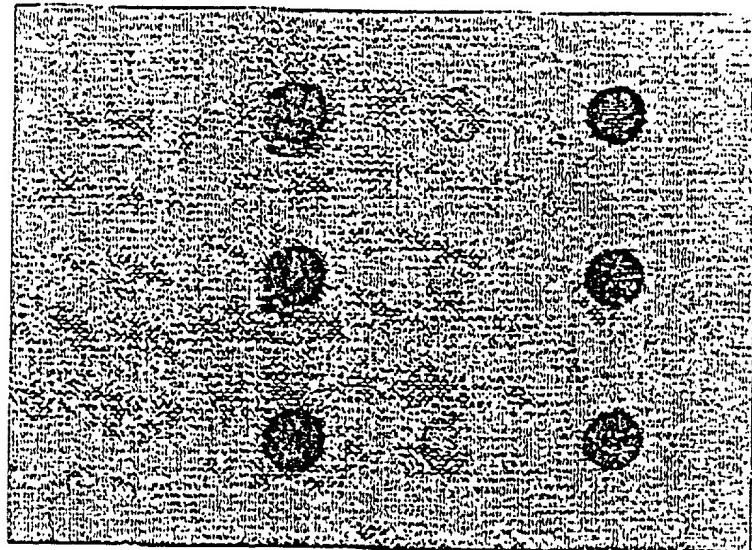
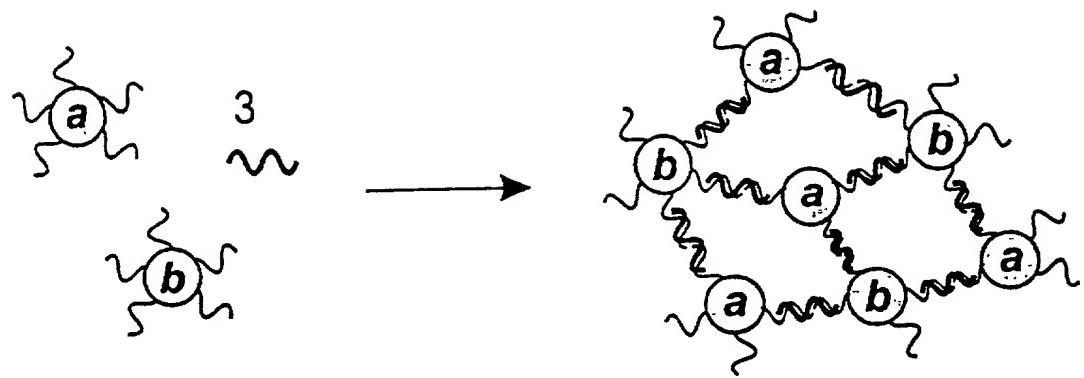


FIG. 36B



C A T G

A



B

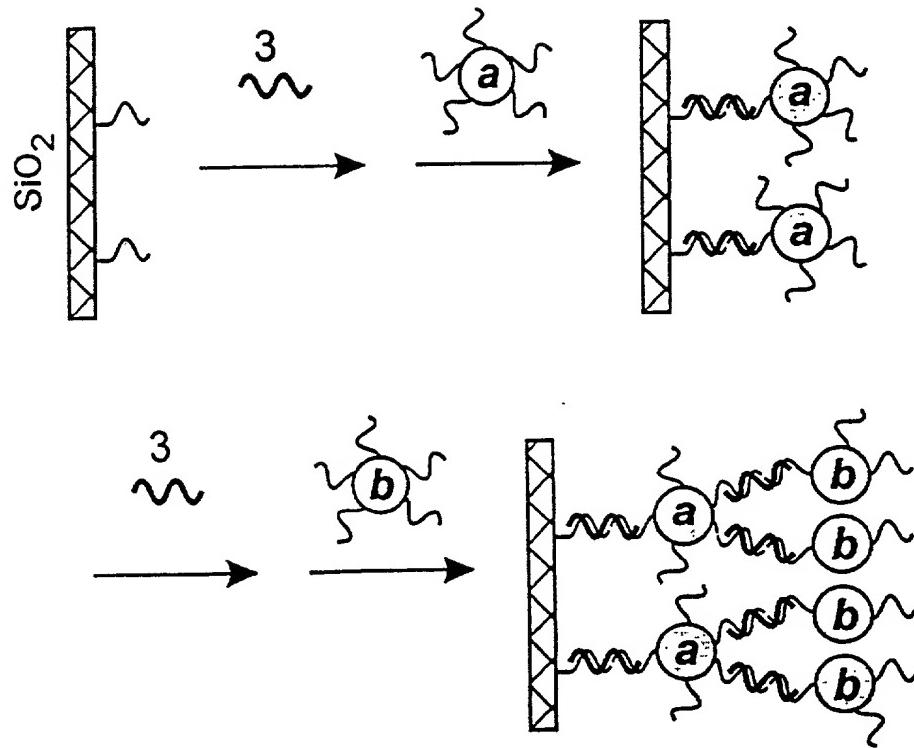


Figure 37

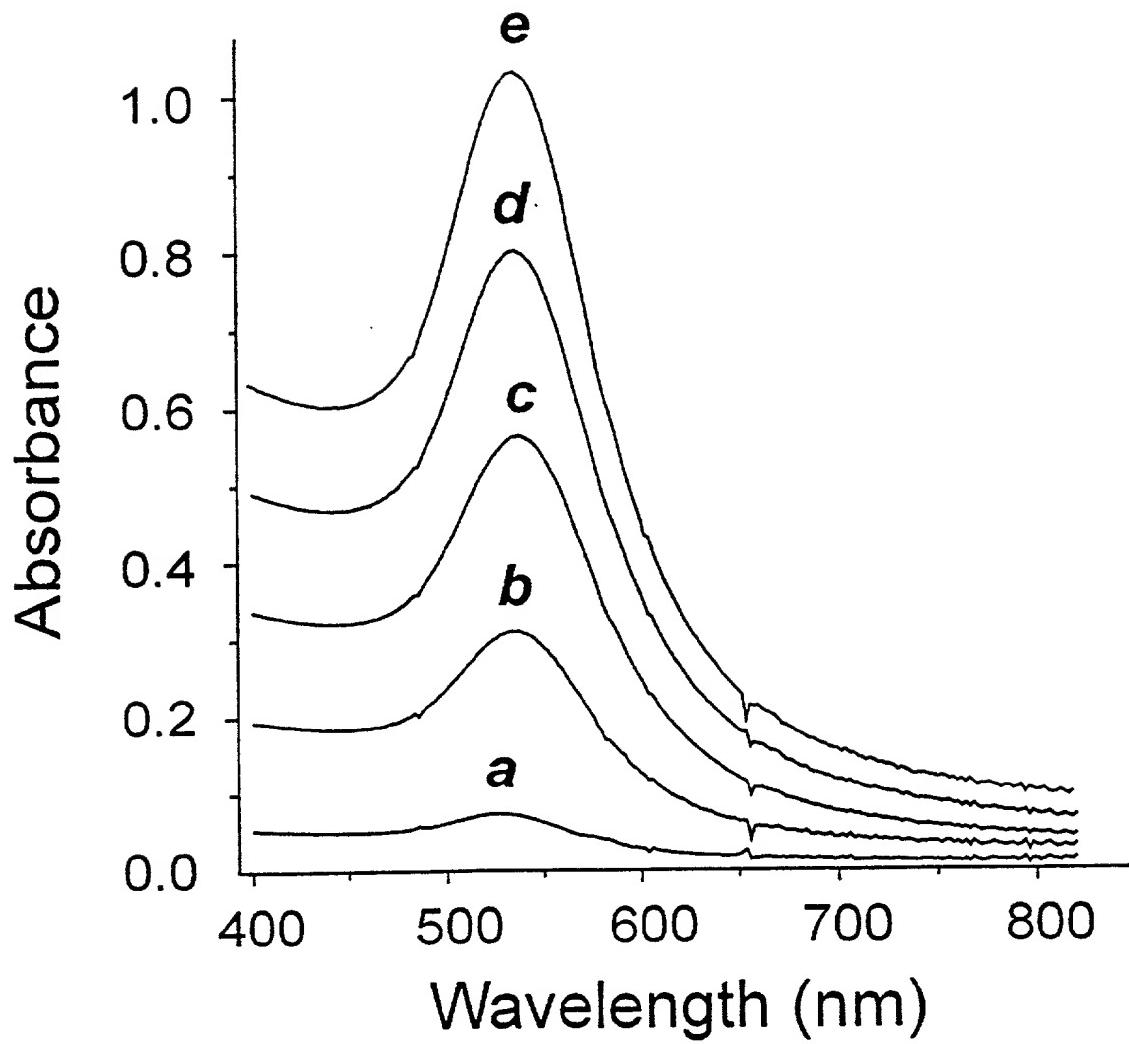


Figure 38A

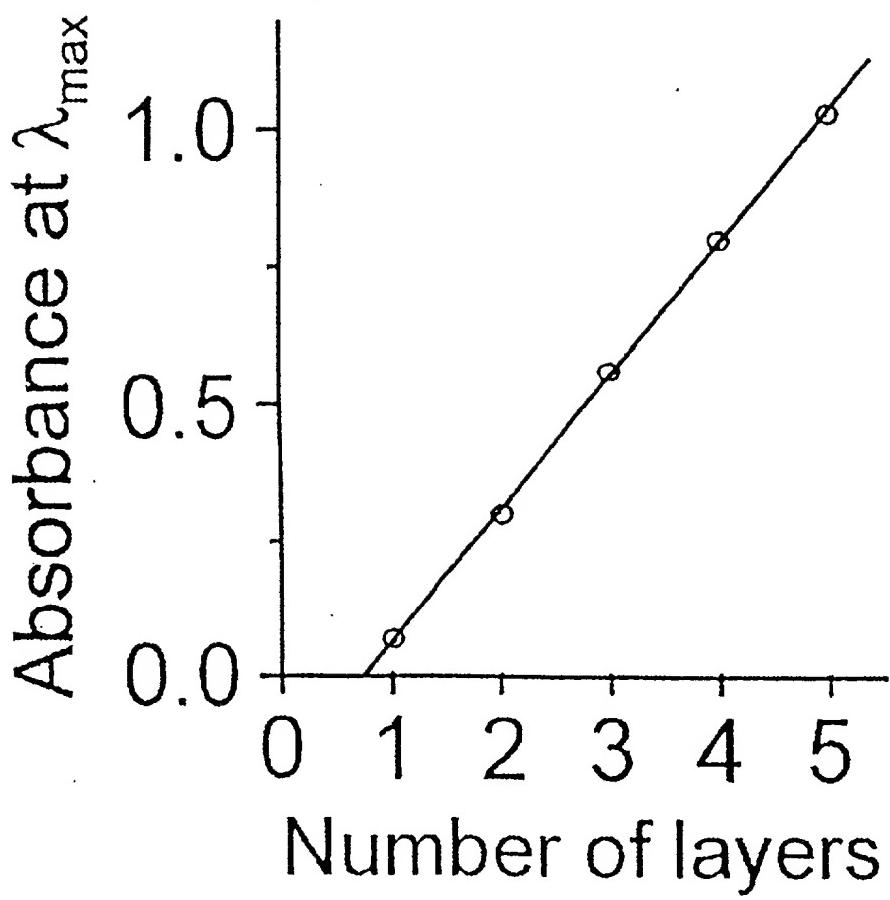


Figure 38B

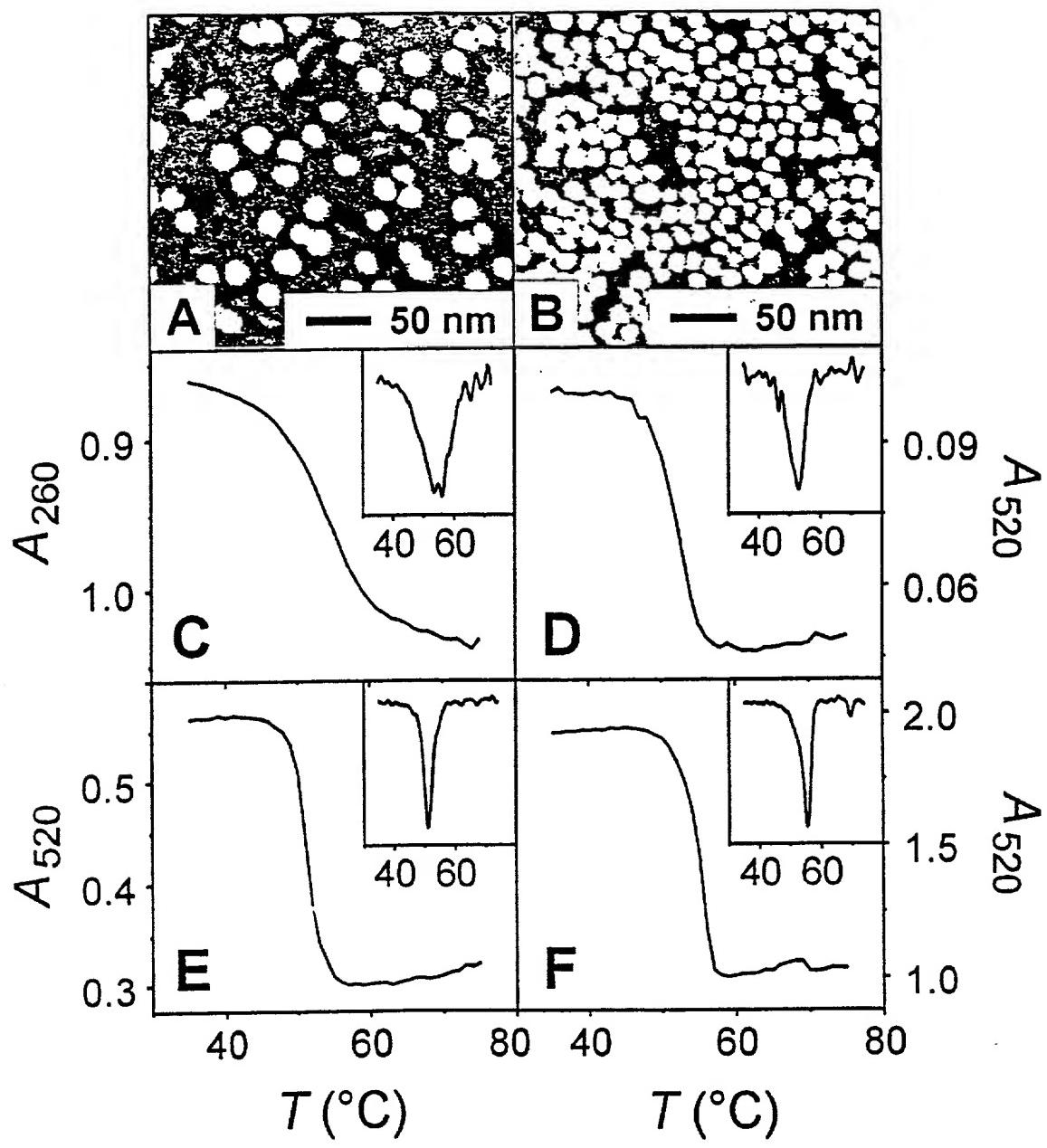


Figure 39

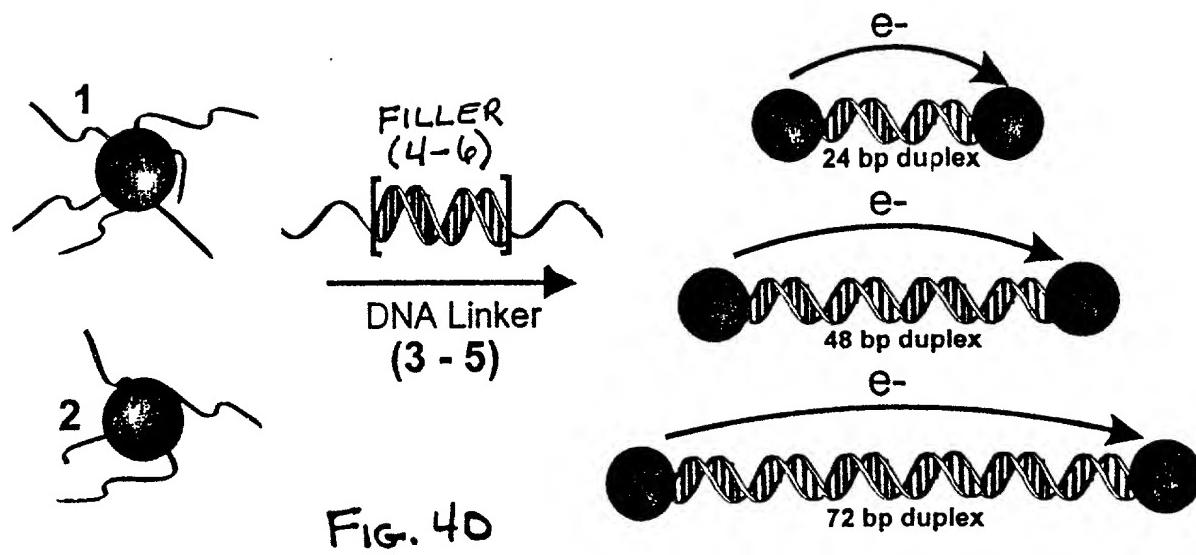


FIG. 40

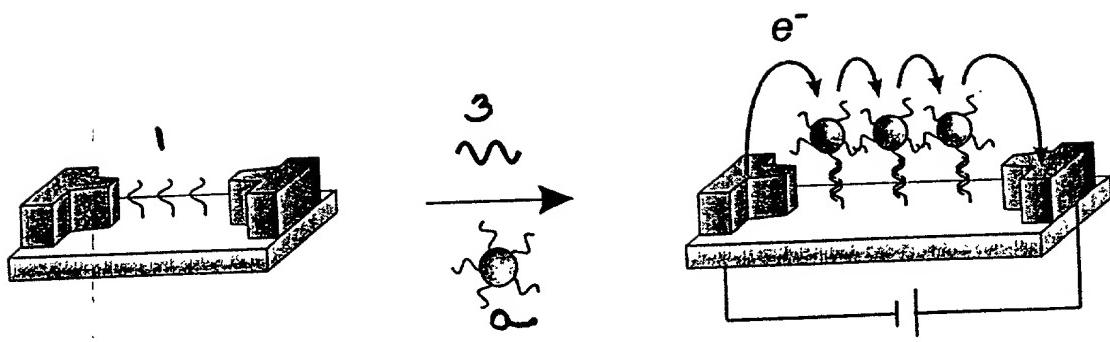


FIG. 41